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SPERMATOPHYTES, MOSTLY PERUVIAN—III

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CHICAGO, U. S. A.

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SPERMATOPHYTES, MOSTLY PERUVIAN—III

J. FRANCIS MACBRIDE

Few if any American botanists have had my privilege of sojourning over a long period at the great herbaria of the Old World. I could easily write a book upon the happy experiences that have been mine and the thanks that I owe so abundantly to the members of the staffs at the several institutions visited. Here I must content myself with a limited mention of the many who have generously cooperated with Field Museum, to the benefit, let us hope, of science generally, in permitting the most complete freedom in carrying on the work delegated to me. The cordial friendship I have met has contributed immeasurably to the consummation of this special work.

Apart from it, I have been able to continue to some extent my interest in the flora of Peru. In presenting the following paper I acknowledge with pleasure my special indebtedness to Dr. Briquet and staff, Conservatoire Botanique, Geneva; to Dr. R. Chodat and staff at the University, Geneva; and to Professors Goebel, Ross, and Suessenguth at the Botanical Institute, Munich, at which institutions, particularly the first, the paper has evolved. As in the case of the last number of this series, I am again happy to record my thanks to Professor Diels and to Professor Pilger and their friendly associates at Berlin-Dahlem.

1. SOME PERUVIAN CONVULVULACEAE WITH A NEW VARIETY

Merremia glabra Hall. f., var. **pubescens** van Ooststr., n. var. —Differt ramis petiolis et foliis quoad nervos paginae inferioris in eodem specimine nunc pubescentibus nunc plus minusve glabris.—Peru: Pampayacu, Hacienda at mouth of Río Chinchao, about 3,500 feet, July 19–25, 1923, *Macbride* 5045. "On sunny thickets, fls. white."

Ipomoea (sect. *Eriospermum*) **clavata** (Don) van Ooststr., comb. nov. *Convolvulus clavatus* Pavón, mss. *Calonyction clavatum* Don, Gen. Syst. 4: 264. 1838. *Ipomoea lactescens* Benth. Pl. Hartw. 120. 1839; Hall. f. in Jahrb. Hamb. Wiss. Anst. 16: Beih. 3: 50. 1898.—Peru: Pozuzo, about 2,000 feet, June 20–22, 1923, *Macbride* 4671. La Merced, about 2,000 feet, Aug. 10–24, 1923, *Macbride* 5394; "on brush."

Ipomoea Plummerae Gray, Syn. Fl. N. Am. ed. 2. 2¹: Suppl. 434. 1886.

In the *Supplement* of his *Synoptical Flora of North America* (434. 1886), Asa Gray gives a diagnosis of this species, followed by a short description of *I. cuneifolia* Gray (Proc. Amer. Acad. 19: 90. 1884). In the latter he writes that this species has the "tuber, peduncles, flowers and habit of the preceding," i.e. *I. Plummerae*, but it differs in the leaves, which are "simple, cuneate, laciniate-dentate at the broad apex, tapering into a short petiole," etc.

In the collections made by Weberbauer in Peru I found two numbers (7275a and 7275), the first of which I suppose to be identical with *I. Plummerae*. The second has the cuneate leaves of *I. cuneifolia* and seems to be identical with that species or nearly allied to it.

As the two forms seem to grow together, I assume that the cuneate-leaved plants represent a variety of *Plummerae*, which I call var. **cuneifolia**, a variety probably identical with *I. cuneifolia* Gray.—Peru: Carumas, Prov. Moquegua, 2,700 m., Feb. 21–Mar. 6, 1925, Weberbauer 7275 and 7275a. "Open mixed formation. Decumbent. Tuberous. Flowers purple."

2. NEW AND OLD PERUVIAN PLANTS

Elodea Potamogeton (Bert.), comb. nov. *Diplandra Potamogeton* Bert. Merc. Chil. 612. 1829; Bull. Férus. 20: 110. 1830. *Anacharis chilensis* Planch. Ann. Sci. Nat. III. 11: 75. 1849. *Elodea chilensis* Casp. Monatsb. Berl. Acad. 47. 1857. *A. Matthewsii* Planch. op. cit. 74?

The original publication of this transferred name is valid; it is not a nomen nudum as has been assumed. The description, in Spanish, is informal, but there is no mistaking the identity, and furthermore, this is the only *Elodea* in the region. The generic name *Philotria* Raf. is not acceptable legally in place of *Elodea*, or at least not until another congress.

Echinodorus palaefolius (Nees & Mart.), comb. nov. *Sagittaria palaefolia* Nees & Mart. Nov. Act. Acad. Nat. Cur. 11: 21. 1823. *Aisma ellipticum* Mart. in R. & S. Syst. 7²: 1607. 1830. *Echinodorus ellipticus* Micheli in DC. Monogr. 3: 51. 1881.

Since this species is known to occur in Mexico and in Uruguay as well as at various intermediate stations, the fact that it does not seem to have been recorded from Peru is annoying rather than significant. The var. **pubescens** (Mart.), comb. nov.—*E. ellipticus* (Mart.) Micheli, var. *pubescens* (Mart.) Micheli—has a scabrous-pubescent rather than glabrous inflorescence.

Bulbostylis tenuifolia (Rudge), comb. nov. *Scirpus tenuifolius* Rudge, Pl. Guian. 18. pl. 22. 1805. *Stenophyllus tenuifolius* Britton, Bull. Torr. Club 43: 448. 1916.

Bulbostylis capillaris (L.) Clarke, var. **coarctata** (Ell.), comb. nov. *Scirpus coarctatus* Ell. Bot. S. C. & Ga. 1: 83. 1816. *Stenophyllus capillaris* Britton, Bull. Torr. Club. 21: 30. 1894.

It is possible that the variety—with a composite umbel of many-flowered spikelets—is merely a robust form.

Pfeiffer, just before the last botanical congress (Repert. Spec. Nov. 27: 85–91. 1929 and 28: 24–26. 1930) raised a great hue and cry for the conservation of the generic name *Bulbostylis*, and with a notable display of righteousness wrote: "The [next] most essential point in nomenclature is . . . the avoidance of any useless introduction of unnecessary names." He then proceeded to coin a superfluous name as follows: "*Bulbostylis conspicua* (Boeck.) H. Pfeiff. n. comb. vel *Stenophyllus conspicuus* (Boeck.) H. Pfeiff. n. comb." *Bulbostylis* should be conserved, which can still be done with reason since there has not yet been a general transfer of the names to *Stenophyllus*.

Dichromena setacea (Berg.), comb. nov. *Schoenus setaceus* Berg. Act. Helv. 7: 130. 1772.

As pointed out by me in previous papers, the genera *Rynchospora* and *Dichromena* constitute in fact but a single genus, for which the latter is the prior name. After the species are transferred, some one will probably demand the employment of the former name. Accordingly, in continuing my legal adoption of the name *Dichromena* (cf. Field Mus. Bot. 4: 165–166. 1929), I am making the above and the following new transfers of species that it has been desirable or necessary to associate with the flora of Peru.

Dichromena Linkii, nom. nov. *Rynchospora tenuis* Link, Jahrb. 3: 76. 1820, not *D. tenuis* Steud. Syn. Cyp. 135. 1855.

Dichromena barbata (Vahl), comb. nov. *Schoenus barbatus* Vahl, Eclog. 2: 4. 1798. *Rynchospora barbata* Kunth, Enum. 2: 280. 1837.

Dichromena Marisculus (Lindl. & Nees), comb. nov. *Rynchospora Marisculus* Lindl. & Nees in Mart. Fl. Bras. 2: 142. 1842.

Dichromena distans (Michx.), comb. nov. *Schoenus distans* Michx. Fl. Bor. Amer. 1: 36. 1803. *Rynchospora distans* Vahl, Enum. 2: 235. 1805.

Dichromena cymosa (Ell.), comb. nov. *Rynchospora cymosa* Ell. Bot. S. C. & Ga. 1: 58. 1816.

Dichromena cyperoides (Sw.), comb. nov. *Schoenus cyperoides* Sw. Prodr. 19. 1788. *Rynchospora cyperoides* Mart. Denkschr. Akad. Wiss. Muench. 6: 149. 1816-17.

Dichromena gigantea (Link), comb. nov. *Rynchospora gigantea* Link, Jahrb. 3: 76. 1820.

Dichromena triflora (Vahl), comb. nov. *Rynchospora triflora* Vahl, Enum. 2: 232. 1806.

Dichromena Schoenus, nom. nov. *Scirpus cephalotes* L. Sp. Pl. ed. 2. 76. 1762, not *D. cephalotes* Britton.

Dichromena amazonica (Poepp. & Kunth), comb. nov. *Rynchospora amazonica* Poepp. & Kunth in Kunth, Enum. 2: 292. 1837.

Dichromena corymbosa (L.), comb. nov. *Scirpus corymbosus* L. Cent. 2: 7. 1756. *Rynchospora corymbosa* Britton, Trans. N. Y. Acad. Sci. 11: 84. 1892.

Dichromena Pearcei (Clarke), comb. nov. *Pleurostachys Pearcei* Clarke, Kew. Bull. Add. Ser. 8: 41. 1908.

In a regional treatment, at least, there is no useful purpose served in maintaining the segregate genus *Pleurostachys*, the generic value of which is not on a par with that of the other genera within the tribe.

Dichromena peruviana (Clarke), comb. nov. *Pleurostachys peruviana* Clarke, Kew. Bull. Add. Ser. 8: 42. 1908.

Dichromena aberrans (Clarke), comb. nov. *Rynchospora aberrans* Clarke, Kew. Bull. Add. Ser. 8: 35. 1908.

This Brazilian species, allied to *D. exaltata*, has been found recently in Peru, according to Pfeiffer.

Rhodospatha Poepp. in Poepp. & Endl. Nov. Gen. 3: 91. 1845.

This genus may well be amended to include the plants that have been referred to *Stenospermatium* Schott (Gen. Ar. 70. 1858), since the latter in general has no distinction except the basal instead of lateral attachment of the ovules. If this character properly forms a basis of generic definition, other groups in the family now included under one name (as *Philodendron*, for example) should be segregated. *Rhodospatha* in this broader sense is too near *Raphidophora* Hassk. (which no doubt should include *Afroraphidophora* Engler and *Epi-premnum* Schott, also based on ovule placement), but that is entirely Old World in distribution and is usually distinguishable by its 1- or partially 2-celled ovary. The alliance of all these plants is very close

Monstera, but here there is the very practical distinction in the difference of leaf nervation (with one or two connecting species as

exceptions). The disposition of the several groups in the tribe may be perplexing if emphasis is placed on the one or two aberrant species uniting genera that, from a standpoint of convenience at least, should be retained, but this confusion is avoided when these aberrant species are left as such; that is, as "exceptions," which are, incidentally, rarely met with. They will also fit better into a rational scheme of classification where their position will be clearly that of connecting links of diverging groups. Accordingly, it seems most natural to merge *Stenospermaticum* with *Rhodospatha* and to treat other aberrant plants (cf. Engler & Krause, Pfl. IV. 23B: 16. 1908), such as *Anepsias* Schott, *Alloschemone* Schott and *Amydrenium* Schott, also as connecting species and not as separately developed genera. The Peruvian species of *Stenospermaticum* to be transferred to *Rhodospatha* are:

Rhodospatha amomifolia (Poeppig), comb. nov. *Monstera amomifolia* Poeppig, Nov. Gen. 3: 88. 1845. *Stenospermaticum amomifolium* Schott, Prodr. 348. 1860.

Rhodospatha crassifolia (Engler), comb. nov. *Stenospermaticum crassifolium* Engler, Bot. Jahrb. 37: 114. 1905.

Rhodospatha flavescens (Engler), comb. nov. *Stenospermaticum flavescens* Engler, op. cit. 111. 1905.

Very doubtfully more than a variety of the next.

Rhodospatha Mathewsii (Schott), comb. nov. *Stenospermaticum Mathewsii* Schott, Gen. Ar. 70. 1858.

Rhodospatha Spruceana (Schott), comb. nov. *Stenospermaticum Spruceanum* Schott, Gen. Ar. 70. 1858.

Rhodospatha popayanensis (Schott), comb. nov. *Stenospermaticum popayanense* Schott, Oesterr. Bot. Zeitschr. 9: 39. 1859.

This species, similar to the preceding but with a much shorter spadix stipe, is to be expected in Peru. The former is found also in Colombia.

Rhodospatha Weberbaueri (Engler), comb. nov. *Stenospermaticum Weberbaueri* Engler, Bot. Jahrb. 37: 110. 1905.

This species, originally from Huánuco, has been found recently at La Merced in Junín by Schunke, according to Professor Krause.

Anthurium Burchellianum (Engler), comb. nov. *A. panduratum* Mart. var. *Burchellianum* Engler, Pfl. IV. 23B: 279. 1905.

Rather similar to *A. clavigerum* Poepp. & Endl., but the petioles shorter, the leaf divisions often fewer, and the peduncle twice and

the spadix half as long. Huber, who found it in eastern Peru, noted the leaves as attaining a width of 1 m.

Xanthosoma Poeppigii Schott, var. **mafaffa** (Schott), comb. nov. *X. mafaffa* Schott, Araceen Betreff. 2: 5. 1855.

X. Poeppigii was published a year earlier than *X. mafaffa*. Engler in *Flora Brasiliensis* treated the former as a variety of the latter. In the var. *mafaffa* the basal leaf lobes are a little introrse and the tube of the spathe is yellowish green.

Paepalanthus peruvianus (Ruhl.), comb. nov. *Syngonanthus peruvianus* Ruhl. Pflanzenr. IV. 30: 253. 1903.

The genus *Syngonanthus* was established by Ruhland (op. cit. 30) to include those species of *Paepalanthus* with more or less connate (at the middle) petals, in the case of the female flowers. This seems to me to be a character that serves most usefully as a means of grouping merely sectionally the supposedly related forms. I think the natural genera in the family are defined only by the variation in the number of the stamens and by the number of the anther cells. On this basis *Blastocaulon* Ruhl. (op. cit. 223) and *Phylodoce* Mart., widely separated by Ruhland because the petals of the latter are partially adnate, are to be merged. The only character in this case remaining to *Phylodoce* that defines it in contrast to *Tonina* Aubl. is the presence of well-developed petals; and in the otherwise similar *Lachnocaulon* Kunth the petals are reduced to hairs. These four groups defined as genera constitute, therefore, from a purely disinterested standpoint, one natural genus. As they exhibit some habitual differences, their maintenance in regional treatments may sometimes be convenient.

Dichorisandra hexandra (Aubl.) Standley, var. **persicariaefolia** (Clarke), comb. nov. *D. Aubletiana* R. & S., var. *persicariaefolia* Clarke in DC. Monogr. 3: 274. 1881.

Apparently the species is represented in Peru only by this form with transversely striate leaves, which perhaps is a distinct species. I collected it in Junín at La Merced.

Dichorisandra Ulei, nom. nov. *D. longifolia* Ule, Verh. Bot. Verein Brandenb. 50: 71. 1908, not Martens & Gal., 1842.

Distinguished by Ule from *D. ovata* Mart. by the longer and glabrous leaves. It may be only a variant of *D. thyrsiflora*, which typically, however, has leaves gradually narrowed to a petiole, a subpaniculate inflorescence, and obtuse petals. The species of the genus are either poorly defined or poorly understood.

Juncus Liebmanni, nom. nov. *Juncus brevifolius* Liebm. Vid. Meddel. For. Kjöben. 40. 1850, not Hoffm. & Link ex Rostk., 1801.

Although Buchenau has proposed two forms of this Mexican and Ecuadorian species as varieties, his name for the typical state (var. *mexicana*) has already been used in the genus. His other variety represents the Ecuador plant, perhaps distinct.

Fortunatia, gen. nov. *Scilla* L. sect.? *Hesperoscilla* Benth. in Benth. & Hook. f. Gen. 3: 815. 1883.

The type is:

Fortunatia biflora (R. & P.), comb. nov. *Scilla biflora* R. & P. Fl. Peruv. 3: 69. pl. 102. 1802. *Ornithogalum biflorum* Don in Sweet, Br. Fl. Gard. Ser. 2: 4. pl. 246. 1838.

Bentham, evidently with hesitancy, referred this Peruvian lily to *Scilla* but called attention to its discrepant characters—the 3-ovulate cells, the complanate filaments, and the open inflorescence of geminate, long-pediceled flowers. It is more diverse from *Ornithogalum*. Indeed, from Krause's key (Pflzf. ed. 2. 15a: 243–254), there appears to be no reason for excluding *Fortunatia* from the Asphodeloideae where it would find a place in the Chlorogalinae and be no more aberrant than in the Scilloideae. As genera in the Liliaceae are commonly accepted, this plant constitutes most properly and conveniently a generic entity differing technically and in aspect from the exclusively Old World groups *Scilla* and *Ornithogalum*. Since neither custom nor rule requires the advancement of the sectional name, I have proposed *Fortunatia* in well-merited commemoration of the work of the Peruvian botanist, Fortunato Herrera. Professor Herrera has kindly sanctioned the choice.

Zephyranthes tubiflora (L'Hér.) Schinz, var. *flammea* (R. & P.), comb. nov. *Amaryllis flammea* R. & P. Fl. Peruv. 3: 56. pl. 286. 1802. *Z. flammea* Baker, Amaryl. 37. 1888.

Possibly this is a color form, but I have seen no specimen. *Z. flava* (Herb.) Baker appears to be scarcely distinct specifically, since its only noteworthy difference is the absence of scales in the perianth tube. *Z. Beustii* Schinz (Viertelj. Zür. Nat. Ges. 424. 1915) seems, from character, to be indistinguishable from *Z. flava*.

Zephyranthes Briquetii, spec. nov.—Tota planta pygmaea prostrata 5–8 cm. longa; bulbi anguste ovato-oblongi 8 mm. diam. in collum circa 1–2 cm. longum attenuati; foliis 2–3 linearibus 3–6 cm. longis circa 1 mm. latis ad apicem subulato-acuminatis; scapo 1–3 cm. longo unifloro; spatha membranacea fere ad basin bifida circa 1.5 cm. longa; pedicello 3–4 mm. longo; ovario 6 mm. longo; perigonio albo (interdum violaceo-maculato) circa 2 cm.

longo, tubo gracili circa 5 mm. longo in faucem subabrupte ampliato, laciniis subaequalibus ut videtur subrotundatis et inter se connatis; filamentis liberis basin versus dilatatis circa 3 mm. longis ad apicem tubi affixis; stylo stamina aequante vel superante, stigmatibus trilobato-folioso.—Peru: With cushion and rosette plants, Carumas, Prov. Moquegua, Feb. 27, 1925, *Weberbauer 7322* (type, Field Museum).

Notwithstanding the large number of species of *Zephyranthes* described in recent years, this little Peruvian one seems to be referable to none of them. Perhaps it is as near *Z. gracilis* Herb. (Amaryl. 172. pl. 29. 1837) as any species, but its differently shaped flowers and much shorter style with foliose stigmas readily separate it. The last character apparently has not been described for any species with the habit of *Z. Briquetii*, although it is entirely characteristic for the genus. Dr. Weberbauer observed that the leaves and flowers were both prostrate.

In studying this collection at Geneva, Dr. Briquet kindly verified my analysis and I welcome the opportunity to associate his name with an apparently unclassified plant.

Stenomesson Elwesii (Baker), comb. nov. *Callithauma viridiflorum* (R. & P.) Herb., var. *Elwesii* Baker, Gard. Chron. n. s. 9: 756. 1878. *S. viridiflorum* (R. & P.) Benth., var. *Elwesii* Baker, Amaryl. 116. 1888.

S. viridiflorum with a merely crenate staminal cup and *S. Elwesii* with the cup deeply 6-cleft and its lobes quadrate and emarginate must be treated as distinct if there is any taxonomic significance in extreme variation in the nature of this organ. Otherwise a number of Peruvian species must be regarded as variants.

Stenomesson viridiflorum (R. & P.) Benth., var. **angustifolium** (Herb.), comb. nov. *Callithauma angustifolium* Herb. Bot. Mag. 67: pl. 3866. 1841.

Baker suggested (Amaryl. 116. 1888) that this form could be regarded as a variety, but he did not make the transfer. Compared with the typical state of the species, its leaves are narrower, its stamens shorter than the perianth, and its style exserted, all characters which often are variable in the genus and family.

Stenomesson Macleanicum (Herb.), comb. nov. *Clitantes Macleanica* Herb. Bot. Reg. 25: Misc. 87. 1839. *Coburgia Macleanica* Herb. op. cit. 28: Misc. 55. 1842.

Similar to *S. luteum* (Herb.) Baker, but the scape 1-flowered and the staminal cup truncate between the short but slender filaments. Both these species have been confused with *S. recurvatum*, which has elongate filaments and several reddish-yellow flowers.

Stenomesson pauciflorum (Lindl.) Herb., var. **curvidentatum** (Herb.), comb. nov. *S. curvidentatum* Herb. Bot. Mag. 53: pl. 2640. 1826.

Apparently like the type, but the perianth slender and the bifid staminal teeth elongate and curved.

Stenomesson variegatum (R. & P.), comb. nov. *Pancratium variegatum* R. & P. Fl. Peruv. 3: 55. 1802. *P. incarnatum* HBK. Nov. Gen. 1: 280. 1815. *S. incarnatum* Baker, Saund. Ref. Bot. sub pl. 308. 1873.

Variable, particularly in color, and a number of forms have been proposed as species.

Hymenocallis narcissiflora (Jacq.), comb. nov. *Pancratium narcissiflorum* Jacq. Fragm. 86. pl. 138. 1809. *P. calathinum* Ker, Bot. Reg. 3: pl. 215. 1817. *H. calathina* Nichols. Dict. Gard. 2: 165. 1886.

This beautiful plant was introduced in 1794 but has scarcely been known except in cultivation. According to Herbert, it came from the Andes of Bolivia or Peru.

Hymenocallis pedunculata (Herb.), comb. nov. *Ismene pedunculata* Herb. Amaryl. 222. pl. 35. 1837. *I. Macleana* Herb. Bot. Mag. 65: pl. 3675. 1839. *H. Macleana* Nichols. Dict. Gard. 2: 165. 1886.

Similar to *H. narcissiflora* but for the straight, slender, and much shorter tube, the linear segments, and the shorter (about 3.5 cm.) cup.

Hymenocallis longipetala (Lindl.), comb. nov. *Elisena longipetala* Lindl. Bot. Reg. 24: Misc. 79. 1838.

Hymenocallis sublimis (Herb.), comb. nov. *Elisena sublimis* Herb. Bot. Mag. 67: sub pl. 3873. 1841.

It is almost amazing that these plants have not before been included in *Hymenocallis*, where they so obviously belong. Herbert himself in Bot. Reg. 25: Misc. 142. 1839, and again in Saund. Bot. Ref. 4: pl. 264. 1871 called attention to their generic similarity. *H. deflexa* (Herb.) Baker, a typical *Hymenocallis*, has been produced by hybridizing *H. narcissiflora* and *H. longipetala*.

Urceolina peruviana (Presl), comb. nov. *Sphaerotele peruviana* Presl, Rel. Haenk. 1: 119. pl. 16. 1827. *S. coccinea* Link, Kl. & Otto, Ic. pl. 38. 1840. *Penitlandia miniata* Herb. Bot. Reg. 25: pl. 68. 1839. *U. miniata* Benth. & Hook. Gen. Pl. 3: 732. 1883.

When Link, Klotsch and Otto described *S. coccinea* they were concerned only with distinguishing their plant from *S. peruviana*, and so far as description and plate indicate, there is no reason whatsoever to question their judgment that the plants are generically the

same. Furthermore, there seems also to be no real specific difference. Nevertheless every one since Bentham has regarded the Presl plant as a species of *Stenomesson* and referred *S. coccinea* to *U. miniata*. Presl makes no mention of the staminal cup that typifies the former genus (although he characterizes the floral structure of his plant in detail), nor does the plate show one. There appears, therefore, to be no reasonable doubt that these three plants are congeneric and conspecific. The flowers, as Herbert long ago remarked, simulate those of *Stenomesson croceum*, so weakly developed is the urceolate character that for other species so readily marks the genus, but, lacking the staminal cup, the plant is best retained in *Urceolina* and regarded as a connecting species.

Urceolina urceolata (R. & P.), comb. nov. *Crinum urceolatum* R. & P. Fl. Peruv. 3: 58. pl. 287. 1802. *U. pendula* Herb. Amaryl. 193. 1837.

This species is readily known by its almost filiform, green tube.

Phaedranassa dubia (HBK.), comb. nov. *Haemanthus dubius* HBK. Nov. Gen. 1: 281. 1816. *Crinum quitense* Spreng. Syst. 2: 55. 1825. *P. chloracea* Herb. Bot. Reg. 31: pl. 17. 1845.

This is an Ecuadorian species, well marked by its red flowers deeply stained with green at the tip.

Nothoscordum fictile, spec. nov., bulbo ovoideo 2–3 cm. crasso collo longo (1–1.5 dm.) instructo; caulibus brevissimis ut videtur nullis vaginis foliorum omnino involutis; foliis prostratis lineari-oblongis anguste longiacuminatis 1–2 dm. longis, 4–10 mm. latis; pedicellis flexuosis gracilibus valde inaequalibus 1–2 cm. longis; floribus albis 4–5 mm. longis; segmentis oblongo-ellipticis ad basin breviter connatis, filamentis subulatis circa 2.5 mm. longis; antheris brunneis vix 1 mm. longis; stylo vix 1 mm. longo; capsula immatura 4 mm. longa ut videtur subovoidea.—Peru: Carumas, Moquegua, Feb. 21–Mar. 6, 1925, *Weberbauer 7262* (type, Field Museum).

Among the species included in Beauverd's painstaking synopsis of the genus (Bull. Herb. Boiss. II. 8: 993–1007. 1908)—which, by the way, is not mentioned in the recent edition of the Pflanzenfamilien along with other omissions, not to mention commissions, including the too frequent violation of the International Rules of Botanical Nomenclature—*N. fictile* is not especially dissimilar to *N. sessile* (R. E. Fries) Beauv., which heretofore was unique in habit. The latter, however, has narrower leaves, a much longer style (about twice as long as the ovary), and smaller fruit. So far as known, it is Argentine.

Dioscorea monadelphoides, nom. nov. *Helmia monadelpha* Kunth, Enum. 5: 421. 1851, not *D. monadelpha* Griseb. 1875. *D.*

monadelpha Pax, Pflanzenf. 2⁵: 133. 1888. *D. subhastata* Vell. Fl. Flum. 10. pl. 121. 1827?

Kunth as recently as 1924 (Pflanzenr. IV. 43: 126) has used the name of Pax for this plant, when modern custom in nomenclature clearly requires that the right to the name be restricted to the species of Grisebach. The Vellozo name, since its application is questionable and not determinable, should be dropped.

Nemastylis Huyanae, spec. nov., adscendens-erecta glaberrima; bulbo ovoideo-conico, circa 2 cm. longo et 1.5 cm. crasso, tunicis fuscescentibus exterioribus abrupte subulato-caudato-acuminatis; caulibus 1.5–3 dm. longis plerumque simplicibus subtortuosis; foliis 2 (1 radicali) 1.5–4 dm. longis, ad basin et versus apicem subulatim attenuatis ad 6 mm. latis; inflorescentiis terminalibus; spathis subaequalibusque similibus acutis circa 4.5 cm. longis, albido-papyraceis; floribus circa 4, mediocriter exsertis, subviridibus atque definite purpureo-maculatis circa 12 mm. longis; lobis anguste obovatis; filamentis in tubum gracilem connatis; antheris vix 4 mm. longis, plus minusve tortis; styli ramis 2-partitis antheris paullo longioribus; pedicellis gracilibus circa 1.5–2 cm. longis; capsulis ut videtur ad basin acutis.—Peru: Matucana, *Macbride & Featherstone* 469 (type, Field Museum).

Apparently this species is related to *N. nana* Wats., which is entirely different in habit. The few species known with greenish and spotted flowers are not Peruvian and appear to be essentially different from this plant. The name commemorates King Huyana, father of the last Inca kings, Huascar and Atahualpa.

N. Pearcei Baker, or rather a variant of it, also was collected at Matucana. The specimens have the large purple flowers and the long anther column of that species, but the anthers are longer than the style branches.

Tigridia lobata (Herb.), comb. nov. *Hydrotaenia lobata* Herb. Bot. Reg. 30: Misc. 66. 1844.

Similar to *T. grandiflora* (Cav.) Diels but apparently distinct, the flowers campanulate, with oblong-cuneate erect segments densely brown-spotted at base.

Costus amazonicus (Loes.), comb. nov. *Costus Malortieanus* Wendl., var. *amazonicus* Loes. Notizbl. 10: 710. 1929.

As species in *Costus* are at present defined, this Peruvian plant seems to exhibit characters that give it that rank.

Heliconia Schumanniana Loes. Bot. Jahrb. 54: Beibl. 117: 12. 1916. *H. Schumanniana* Loes., var. *basirubra* Loes. loc. cit.

This is a species of *Heliconia* that admittedly shows considerable variation in the color of the bracts and flowers, and the fact raises

the question whether many of the twenty collections recorded as distinct species in Peru are not rather similar color variants in at least some instances. However this may be, the following color forms of this plant may take that taxonomic status.

Heliconia Schumanniana Loes., forma **apicirubra** (Loes.), comb. nov. *H. Schumanniana* Loes., var. *apicirubra* Loes. Bot. Jahrb. 54: Beibl. 117: 12. 1916.

Heliconia Schumanniana Loes., forma **acreana** (Loes.), comb. nov. *H. Schumanniana* Loes., var. *acreana* Loes. loc. cit.

Renealmia cernua (Sw.), comb. nov. *Costus cernuus* Sw. ex R. & S. Syst. 1: 25. 1817.

This unusual species, with the aspect of *Costus*, has, apparently, never been "properly" christened, that is, in accord with the usage of modern nomenclature.

Monotagma spicatum (Aubl.), comb. nov. *Maranta spicata* Aubl. Hist. Pl. Gui. 1: 4. 1775. *Phrynium Parkeri* Rosc. Monandr. Pl. pl. 42. 1828. *Monotagma Parkeri* Schum. Pflanzenr. IV. 48: 168. 1902.

The Peruvian plant seems to be identical with the type of the species from French Guiana, a not particularly remarkable fact and yet at the same time not particularly usual. No other *Monotagma* known in Peru has pilose-annulate petioles.

Hedyosmum Kanehirae, spec. nov., arbuscula ad 5 m. alta; ramulis subquadrangulatis dense verruculosus; foliis numerosis rigido-coriaceis opacis breve (3-6 mm.) petiolatis glabris minute denseque crenato-denticulatis oblongo- vel lanceolato-ellipticis, basi subacutis, apice abrupte obtuseque acuminatis, plerumque circa 6.5 cm. longis et 2.5-3 cm. latis; nervis lateralibus subtus mediocriter prominentibus et plus minusve reticulatis; floribus masc. ignotis, cymulis fem. racemoso-spicatis subapproximatis 4-5 mm. longis, 3-4 mm. latis; bracteis drupas subaequantibus vel paullo brevioribus; drupis nigris trigonis acutis 1.5 vel vix 2 mm. longis.—Peru: Pan de Azúcar, Huánuco, *Sawada 64* (type, Field Museum).

Having had the pleasure recently of naming a species for Mr. Sawada, well merited by his active interest in the flora of Peru, I dedicate this *Hedyosmum* to his friend, Dr. Kanehira, who has kindly shared his collections and those of Sawada with Field Museum. The species, among Peruvian ones, resembles most *H. Lechleri* Solms, from which its scurfy branchlets, small elliptic leaves, and tiny black drupes easily separate it. These characters in conjunction with its glabrous leaves appear to distinguish it from all species.

Hedyosmum Huascari, spec. nov., ut videtur dioicum; ramulis subteretibus striatis glabris; petiolis circa 5 mm. longis; foliis ovato-ellipticis, vix acutis, rigido-coriaceis glabris obscure denseque denticulatis plerumque circa 6 cm. longis et 2-2.5 cm. latis; venis haud prominentibus supra vix notatis; spicis masculis ignotis; cymulis spicato-aggregatis, 5-6 mm. longis, 3-4 mm. latis; bracteis drupis brevioribus; drupis pallide brunneis circa 3.5 mm. longis.—Peru: above Tabaconas, Cajamarca, *Weberbauer 6113* (type, Field Museum).

Similar to *H. Lechleri*, but apparently distinguishable by its coriaceous and broader, obtusish leaves. Its name commemorates Huascar, son of the Inca king Huyana. He died in battle over the kingdom inherited jointly with his brother Atahualpa.

The species of *Hedyosmum* are obscure in character. While proposing the above plants as new, I am (as usual) unable to distinguish some of the species described by others. For example, the characters relied upon by Solms to distinguish *H. integrum* Cord. and *H. Sprucei* Solms from *H. racemosum* (R. & P.) G. Don, seem, at least in part, explained as degrees of maturity. They may be varieties of one species, but more material is needed than the types or cotypes seen by me to decide this. Some forms of this group appear to approach *H. arborescens* Sw. too closely. Melchior (Notizbl. 9: 1036. 1926) has called attention to the weak distinction between *H. racemosum* and *H. brasiliense* Mart. Besides my species and *H. racemosum*, there are perhaps four others in Peru that are fairly well marked: *H. scabrum* (R. & P.) Solms, *H. Dombeyanum* Solms, *H. Lechleri* Solms and *H. glaucum* (R. & P.) Cord.

Clarisia nitida (Allem.), comb. nov. *Soaresia nitida* Allem. Palestr. Sc. Rio Jan. 142. pl. 1, 2. 1857 (i.e., Revista Braz. 1: 209. 1857).

A specimen (*Ducke 16606*) of this desirable timber tree of Brazil, the "guariuba," in herb. Delessert (examined by the courtesy of the Director, Dr. Briquet) was distributed as *Clarisia racemosa* R. & P. I judge from the original description and plate that it is the tree described by Allemão, loc. cit. Certainly it is not the tree of Ruiz and Pavón, the "tulpay" of Peru, a tree also of value.

Fruiting material of the latter (as well as of *C. biflora* R. & P.) is preserved in herb. Boissier of the University, Geneva, and through the kindness of Professor Chodat I have been able to study it also. It has rather thin, elliptic, acuminate leaves about two decimeters long by half as broad, glabrous and smooth above but the lateral nerves obvious, these with the midrib prominent beneath and shortly rusty-villous. The fruiting spikes are 2-3 cm. long, the sessile,

closely crowded, velvety-puberulent, globose fruits, apparently nearly mature, only 5–6 mm. in diameter. These characters are strikingly at variance with those of the Brazilian tree with so much smaller, glabrous leaves and large, glabrous fruits. The latter may resemble more *C. biflora* R. & P. with large (2 cm. in diameter), somewhat verruculose fruits borne on stout pedicels about 5 mm. long. The very reticulate-veined, lustrous, subcoriaceous leaves of this species are about 1.5 decimeters long by half as broad, abruptly caudate-acuminate, and glabrous.

Helicostylis tomentosa (Poepp. & Endl.), comb. nov. *Olmedia tomentosa* Poepp. & Endl. Nov. Gen. 2: 32. *pl.* 145. 1838. *H. Poeppigiana* [Mart.] Tréc. Ann. Sci. Nat. III. 8: 134. 1847.

Staminate specimens of this tree are doubtfully distinguishable from *Perebea*, and it is very probable that the genus, along with many others in the family, will some day be regarded as having no more than an academic interest, treated as sections of a few more naturally defined groups.

Sorocea Sprucei (Baill.), comb. nov. *Pseudosorocea Sprucei* Baill. Adans. 11: 296. 1875.

This species was described as glabrous, but two specimens of the type collection—*Spruce 4483* from Tarapoto—which I have seen have minutely pubescent branchlet tips and petioles, with more or less pubescence also on the under leaf surfaces. Except for the pubescence, it resembles generally *S. muriculata* Miq.

Pseudolmedia Huberi, nom. nov. *Pseudolmedia obliqua* (Hub.) Ducke, Arch. Jard. Bot. Rio 3: 31. 1922, not *P. obliqua* (Karsten) Benth. & Hook.

This Amazonian tree, since its original name is already pre-occupied in the genus, may be rechristened as above, in memory of the capable Swiss botanist who, in a remarkably short time and under discouraging conditions, did so much toward the classification of the plants of the region.

Pseudolmedia laevis (R. & P.), comb. nov. *Olmedia laevis* R. & P. Syst. 258. 1798.

The material seen by me is young or imperfect, but the species seems without question referable to this genus.

Ogcodeia Ulei (Warb.), comb. nov. *Acanthosphaera Ulei* Warb. Verh. Bot. Ver. Brandenb. 48: 150. *pl.* 2. 1907. *Naucleopsis Ulei* Ducke, Arch. Jard. Bot. Rio 3: 38. 1922.

Ogcodeia caloneura (Hub.), comb. nov. *Olmedia*(?) *caloneura* Hub. Bol. Mus. Pará. 5: 336. 1909. *Naucleopsis caloneura* Ducke, Arch. Jard. Bot. Rio 3: 38. 1922.

Professor Mildbraed has recently revived and redefined the genus *Ogcodeia* Bur. The first of the above species is Peruvian. It may be distinguished readily from the other species definitely known from that country by its broad leaves with more numerous nerves (25–30). The second, Brazilian, suggests *O. Tessmannii* Mildbr. of Peru, but its bracts and young parts are puberulent-tomentose.

Perebea australis (Hemsl.), comb. nov. *Castilla australis* Hemsl. in Hook. Icon. 7: pl. 2676. 1901.

Dubiously enough I am transferring this plant, which I have not seen, from *Castilla*. Several factors induce me to do so: it is, presumably, from southern Peru; there is no reason to question the accuracy of the plate or the description; *Castilla* is otherwise unknown from Peru, but *Perebea* is represented there by species remarkably similar. The latter genus is distinguishable from the former particularly by its short style with short stigma, characters well delineated in the plate of *P. australis*. Unfortunately only pistillate inflorescences are known, so the other distinctive character of *Castilla*, i.e. the presence of scales among the staminate flowers, can not be proved; but its style is certainly the typical style of *Perebea*, and this genus becomes very weak indeed if this tree can not be referred there. Accordingly I am transferring it as indicated, notwithstanding its inclusion by Pittier in *Castilla* in his revision of the genus (Contr. U. S. Nat. Herb. 13: 7. 1910).

Phrygilanthus longebracteatus (Desr.), comb. nov. *Loranthus longebracteatus* Desr. in Lam. Encyc. 3: 599. 1792. *L. glaucus* R. & P. Fl. Peruv. 3: 45. pl. 275. 1802. *L. corymbosus* F. G. Dietr. Vollst. Lexic. Gaertn. Nachtr. 4: 468. 1815–21. *P. corymbosus* Eichl. in Mart. Fl. Bras. 5²: 46. 1868.

This well-defined Peruvian species has been re-collected (det. Krause) by Raimondi and Weberbauer, the latter's number 2489 from the department of Ancash under the native name "pupa."

Oryctanthus ovalifolius (R. & P.), comb. nov. *Loranthus ovalifolius* R. & P. Fl. Peruv. 3: 50. pl. 177. 1802.

As suggested by Eichler (in Mart. Fl. Bras. 5²: 91. 1868), this can scarcely be referred to *O. florulentus* (Rich.) Urban, that is, *O. ruficaulis* (P. & E.) Eichler. It is glabrous, simple-stemmed, and alternate-leaved.

Phthirusa paniculata (HBK.), comb. nov. *Loranthus paniculatus* HBK. Nov. Gen. 3: 442. 1820. *L. conduplicatus* HBK.

op. cit. 441. *L. Theobromae* Willd. ex R. & S. Syst. 7: 132. 1829.
P. Theobromae Eichl. in Mart. Fl. Bras. 5²: 56. 1868.

Accepting Eichler's conclusion that the above names refer to the same species, I take up the earliest and choose *paniculatus*, as it describes the diagnostic feature of the plant.

Acrodiclidium limbatum (Nees), comb. nov. *Nectandra limbata* Nees, Linnaea 21: 509. 1848. *A. limbosa* [R. & P.] Mez, Berl. Jahrb. 5: 89. 1889.

The Nees name is based on a specimen by Tafalla from Tacna, Peru. Mez refers doubtfully to *Nectandra* another collection from Tarma that Nees, hesitatingly, included in his species. In any case, the Nees name is the first validly published, whether or not restricted to the Tacna tree.

The species is one of a number illustrated by Ruiz and Pavón in their Laurograph or in the extremely limited edition of volume four of their well-known *Flora of Peru and Chile*. Most of the names signed to the plates were taken up by later authors as written and usually before another name had been validly published for the same plant. There are some instances, however, in which the name was either changed (as here) when finally published or separate valid publication made without reference to the Ruiz and Pavón work. In these latter cases precision if nothing else seems to require the use of the name first validly published. Accordingly as above I accept the name as actually published and not as written by Mez.

Persea Ruizii, nom. nov. *P. ferruginea* [R. & P.] Mez, Berl. Jahrb. 5: 154. 1889, not HBK. Nov. Gen. 2: 159. 1817.

Mez erred in publishing for Ruiz and Pavón in *Persea* a name that was already in valid use in that genus. To avoid the conflict he changed the established name(!) to *P. Humboldtii* Mez.

Ocotea cuneata (Nees), comb. nov. *Oreodaphne cuneata* Nees, Syst. Laur. 385. 1836. *Ocotea cuneifolia* [R. & P.] Mez, Berl. Jahrb. 5: 259. 1889.

Here is another instance in which the name in use is not the one first published validly.

Ocotea Poeppigiana (Nees), comb. nov. *Oreodaphne Poeppigiana* Nees, Syst. Laur. 404. 1836. *Ocotea multiglandulosa* [R. & P.] Mez, Berl. Jahrb. 5: 280. 1889.

And this is a further example of a name technically never published having supplanted one proposed validly. The species in exact character approaches *Phoebe*, and is one of many that illustrate

the fundamental unity of the four or five groups traditionally accepted as "genera."

Ocotea sublanuginosa (Nees), comb. nov. *Oreodaphne sublanuginosa* Nees, *Linnaea* 21: 515. 1848. *Ocotea ovalifolia* [R. & P.] Mez, *Berl. Jahrb.* 5: 261. 1889.

Nees having published this species before Mez took up the name of Ruiz and Pavón, the former's name, of course, must be used.

Nectandra acuminata (Nees & Mart.), comb. nov. *Persea acuminata* Nees & Mart. in Nees, *Syst. Laur.* 170. 1836. *N. acutifolia* [R. & P.] Mez, *Berl. Jahrb.* 5: 409. 1889.

This shrub or small tree has been collected in Peru near Monzón by Weberbauer (det. Mez) and in the department of Cajamarca by Raimondi (det. Schmidt).

The laurels of Peru comprise an interesting group of shrubs and trees, some of the latter magnificent. When Mez monographed the family, he did, it seems to me from a rather casual knowledge of the Peruvian species, a beautiful work, painstaking and, for its day, conservative. He brought order out of near-chaos and gave what is in all probability a classification essentially natural. But, as he himself indicated, the generic lines, especially as concerns *Persea*, *Phoebe*, *Nectandra*, and *Ocotea*, are broken by species that in one or more essential characters do not entirely conform. As more species become known, more modifications will in all probability be disclosed and thereby prove more definitely that certain generic characters regarded as fundamental, such as the degree of development of staminodia and the position and relative position of anther cells, are themselves merely variable characters. If such is the case, and in my opinion even if it were not, these characters would serve a more useful purpose and be interpreted more accurately if they were permitted to define merely sections of a generic unit where they would still express the apparent group relationships. The fact that there are no good concomitant characters of fruit or foliage, all species considered in the genera mentioned, suggests very strongly that the really natural limitations of the group or groups have even yet not been correctly defined. Therefore it may be hoped that the next monographer of the laurels will, even as Mez, break from tradition, and classify the group on a broader, more practical, and probably more natural basis. Were the genera not so particularly drawn, the rather clear vegetative characters of many species, if indeed not of all proper species, would permit of their determination in any condition. The situation now, to anyone but perhaps a professional

taxonomist, is open to ridicule: they are among the most conspicuous trees of the American tropics, but when not in flower, scarcely a man can venture to state with certainty even a generic name.

Fortunately more and more students believe that classification of flowering plants can serve a dual purpose, philosophical and economical, without any sacrifice of the former. When the results of this belief become manifest, then, and only then, will the *raison d'être* of the science be satisfied. A taxonomy limited in usefulness is unsatisfactory. The present accepted classification of the American laurels is a pointed illustration.

Calandrinia ciliata (R. & P.) DC., var. ***Menziesii*** (Hook.), comb. nov. *Talinum Menziesii* Hook. Fl. Bor. Amer. 1: 223. pl. 70. 1833. *C. caulescens* HBK. var. *Menziesii* (Hook.) Gray, Proc. Amer. Acad. 22: 277. 1886.

The identification of *C. ciliata* (R. & P.) DC. Prodr. 3: 359. 1828, has been impossible from the meager description. There are in herb. Delessert three specimens collected by Pavón that, though unnamed or not so labeled, seem to me to represent the plant described as *Talinum ciliatum*. Unfortunately, one specimen so labeled is certainly not that species, as it has a totally different inflorescence and is quite glabrous. The rest of the material, however, fits the description, and I can detect no differences between it and *C. caulescens* HBK., as that later described species has come to be interpreted over its wide range from California to Peru. The more common form of western North America with more numerous stamens (often) and larger flowers must, therefore, be transferred to the first specific name, as indicated above. I think it is more than probable that *Phacosperma peruviana* Haw., *C. Phacosperma* DC., that is, is the same, in spite of its 13 stamens, as the number of stamens is known to be variable. Notwithstanding its name, it is doubtfully Peruvian.

Calandrinia crenata (R. & P.), comb. nov. *Talinum crenatum* R. & P. Syst. 115. 1798.

This species is apparently unknown except for the original collection, and except for the crenulate petals it is scarcely distinguishable from the next.

Calandrinia Ruizii, nom. nov. *Talinum polyandrum* R. & P. Syst. 115. 1798, not *C. polyandra* Benth.

This seems to be related to *C. grandiflora*, but is smaller in all its parts. It therefore approaches *C. adenosperma*, recently segregated by Johnston, but the seeds, though minutely white-hispidulous,

are eglandular. It has been found near Lima, and re-collected near Arequipa, the type region.

Calandrinia quivensis, spec. nov., annua (vel biennis) glabra; caulibus gracilibus plus minusve ramosis foliosissimis strictis circa 3 dm. altis; foliis linearibus sessilibus acutis ad 4 cm. longis et 2 mm. latis; pedunculis aphyllis usque ad 6 cm. longis; racemis simplicibus vel 1-2-furcatis circa 1 dm. longis; bracteis inconspicuis vix 1 mm. longis; pedicellis fructiferis 5-6 mm. longis haud valde patentibus vel interdum suberectis; floribus (circa 6-12) purpureis ut videtur 5 mm. longis; capsula 4-4.5 mm. longa sepâlis subrotundatis fere duplo longiore; seminibus globosis opacis minutissimis et obtuse tuberculatis.—Peru: Open rocky slope, Quive, Lima, *Pennell 14299* (type, Field Museum).

Apparently this plant is very similar to *C. lingulata* from the same region, but it appears to be distinguishable by the conspicuously elongate capsules. There are no perfect flowers in my material.

Portulaca Haughtii, spec. nov., annua ut videtur erecta circa 8 cm. alta, superne plus minusve patenter ramosa, axillis longe albo-pilosis; foliis sparsis alternis in sicco mediocriter persistentibus sublinearibus sessilibus vix acutis ut videtur subteretibus glabris plerumque 10-15 mm. longis, 1-1.5 mm. latis; internodiis 5-15 mm. longis; capitulis haud dense albo-pilosis (pilis 3-5 mm. longis) bracteis (foliis superioribus) circa 10 involucratis ad 1 cm. longis 3-5-floris; calyce supra rupturam 3 mm. longo, lobis basi connatis triangularibus acuminatis rubescentibus; corolla flava vix ad 4 mm. longa, petalis oblongo-ellipticis, abrupte acutis; staminibus circa 10; stylo supra medium quadrifido; capsula globosa, vix 2 mm. diametro, breviter stipitata paullo infra medium circumscissa; seminibus brunneis 0.35 mm. diametro, acute et minute tuberculatis, tuberculis elevatis circumcirca vix manifeste stellatim radiantibus.—Peru: North of Pariñas Valley, Piura, March 25, 1929, *Oscar Haught F-180* (type, Field Museum).

Among Peruvian species this *Portulaca* keys to *P. lanuginosa*, which has procumbent stems, shorter leaves, and many stamens. Species other than Peruvian with brown seeds and yellow flowers that have come to my notice all seem, from description, to be obviously different from this plant, with the possible exception of *P. Milleri* of Margarita, which has more numerous leaves and stamens and a six-parted style.

Portulaca tingoensis, spec. nov., annua erecta vel suberecta basi ramosa 5-10 cm. alta; ramis simplicibus plus minusve rubescentibus in sicco fere 2 mm. crassis, apice (sub involucro) valde incrassatis; internodiis 1-2 cm. remotis; foliis alternis inferioribus deciduis laxis fere ignotis sed ut videtur oblongo-spathulatis subteretibus circa 1 cm. longis, superioribus similibus paucis ad 2 vel aliquid

3.5 mm. latis; floribus ignotis; capsulis plerumque capitato-confertis terminalibus sed etiam solitario-axillaribus cum pilis sordide albis 5–7 mm. longis dense involutis, 2–3 mm. longis medium versus circumscissis dehiscentibus; seminibus circa 0.6 mm. diam. atropalescentibus obtuse stellato-tuberculatis.—Peru: Arequipa, open, sandy and rocky slopes, Tingo, *Pennell 13111* (type, Field Museum).

A plant of dubious specific standing, evidently allied to *P. pilosa* and its numerous variants. However, as far as other Peruvian specimens are concerned, its metallic-lustrous seeds and its habit distinguish it readily enough.

Gynandropsis gracilis (Tr. & Pl.), comb. nov. *Cleome gracilis* Tr. & Pl. Prodr. 1: 74. 1862.

Gynandropsis macrothyrsis (Tr. & Pl.), comb. nov. *Cleome macrothyrsis* Tr. & Pl. Prodr. 1: 72. 1862.

Gynandropsis puberula (Tr. & Pl.), comb. nov. *Cleome puberula* Tr. & Pl. Prodr. 1: 71. 1862.

It is entirely apparent from a reference to the above-cited work that the authors did not regard *Gynandropsis* as a genus distinct from *Cleome*, and the fact is emphasized by their own transfer of species described in the former to the genus *Cleome*. To accredit the above names to *Gynandropsis* with Triana & Planchon as authority is therefore an error that the authors could not sanction. I think, however, that the genus is acceptable and express this opinion in the case of the above species, which have come to notice in the course of study of some related Peruvian forms, and the type collections of which I have seen.

Echeveria Harmsii, nom. nov. *Oliverella elegans* Rose, Bull. N. Y. Bot. Gard. 3: 2. 1903, not *E. elegans* Rose, 1905. *Cotyledon elegans* N. E. Br. Bot. Mag. 131: pl. 7993. 1905. *E. elegans* Berger, Pflanzenf. ed. 2. 18a: 472. 1930.

As I have had occasion to point out at least once in nearly every paper published by me, the transfer of a specific name into a genus that already contains the same name is not in accord with accepted nomenclatorial custom. The plant *Oliverella elegans*, therefore, when treated as an *Echeveria*, requires another specific designation because there is already an *Echeveria elegans*. This seems to be a nomenclatorial maneuver which is so simple, sensible, and natural that it is liable to be followed always, supported by botanical opinion regardless of what future law-tinkerers may decide to do about it. With some confidence, therefore, I make this particular name change, and with much pleasure select a new name for this beautiful plant.

Escallonia Atahualpae, spec. nov., arbor 10–15 m. alta; ramis brunneis adultis nudis valde in laminas papyraceas exfoliatis, ramulis novellis granulo-tomentulosis; foliis lanceolatis basi apiceque cuneato-attenuatis acutis minutissime denseque denticulatis glabris vel glabratiss sessilibus (vel interdum in petiolum breviter decurrentibus) demum circa 10 cm. longis, 2.5 cm. latis, saepius minoribus; racemis pendulis terminalibus simplicibus circa 1 dm. longis parce glandulosis; bracteis setaceis contortis 3–5 mm. longis; pedicellis circa 4 mm. longis; calycis laciniis triangularibus acutis vix 2 mm. longis; petalis erectis oblongis 3 mm. longis; receptaculo cupulato; stylo 3 mm. longo, stigmatibus peltatis; antheris fere 2.5 mm. longis filamenta perbrevia multo superantibus; capsula ignota.—Peru: Gravelly river valley, Tambo de Pariocota, Ancash, Oct. 8, 1922, *Macbride & Featherstone 2541* (type, Field Museum).

The generic character of *Escallonia* calls for elongate slender filaments; in the species described above they are very much shorter than the conspicuous large anthers. If it were not for the fact that two botanists of reputation have kindly verified my reference of the plant to *Escallonia*, I should be inclined to think that again I have described a species in the wrong genus. The tree simulates *E. pendula* in aspect, but the narrower leaves are glabrous and the flowers are considerably smaller.

Whether King Atahualpa murdered his brother or merely defended himself, his famous name may appropriately be perpetuated in the botany of the land of the Incas. Anyway, it may be mentioned, for the pleasure of the cynics, that it would not be the first time that a plant has been named for a reprobate.

Desmodium immerens, spec. nov., erectum vel fere erectum ad 6 dm. altum; caulibus superne petiolis foliisque plus minusve pilosis vel interdum glabratiss; stipulis liberis longe acuminatis; petiolis 3–4 cm. longis; foliolis 3 late ovatis vel rotundato-ellipticis vel ovato-lanceolatis, apice rotundatis vel raro acutis semper apiculatis; racemis laxis 1–2 dm. longis; pedicellis fere 2 cm. longis; floribus pallide rubro-purpureis 8–9 mm. longis; calycis labio superiore integro ovato vix 3 mm. longo; vexillo exauriculato late obovato emarginato ad basin late cuneato sed haud unguiculato medio 6 mm. lato, 8 mm. longo; alis carinam subaequantibus circa 8 mm. longis, 3 mm. latis; leguminibus breviter stipitatis, leviter arcuatis, sutura superiore definite, inferiore profunde sinuata; articulis plerumque 5 prehensili-pubescentibus 8 mm. longis, 5 mm. latis.—Peru: Muña, Dept. of Huánuco, *Macbride 4000* (type, Field Museum). Yanano, Dept. of Huánuco, *Macbride 3725*.

Not a *Meibomia*, as restricted by Schindler, because of the sessile, not at all clawed standard, nor a *Nephromeria*, because of the numerous pod segments, this plant must be considered a true *Desmodium*,

and in that group it seems to approach closely only *D. affine* Schl., the pods of which are exactly straight on the upper edge. The existence of these collections, which, incidentally, have caused me no end of trouble for which only my own limitations may be blamed, appears to support the opinion expressed in a former paper that *Desmodium* may rightly include the groups *Meibomia* and *Nephromeria* as sections.

Parosela Sawadae, spec. nov., fruticosa ut videtur erecta sed diffusa et laxa ramosa; ramulis puberulis demum glabris parce glandulosis; stipulis setaceis glabris; foliolis plerumque 11, petiolatis ellipticis 4–5 mm. longis, 2–3 mm. latis, supra glabris subtus puberulis et plus minusve pallide glanduloso-punctatis; spicis longe pedunculatis vel interdum subsessilibus demum 4–8 cm. longis; bracteis glabris paullo et obscure punctatis persistentibus caudato-acuminatis 4–6 mm. longis; calycis dentibus inaequalibus basi ipsa ovatis superne fere spinuloso-subulato-apiculatis tubo dense villosa et valde nervato subaequilongis ad circa 2 mm. longis; floribus circa 8 mm. longis; carina alisque ut videtur albis, vexillo purpureo.—Peru: Huánuco, *Sawada P11* (type, Field Museum). San Rafael, Dept. of Huánuco, *Sawada P112*.

Mr. Sawada's continued interest in the flora of Huánuco is hereby, with pleasure, given merited recognition.

As specific lines are drawn in this genus at present, it is necessary to add another name to take care of this diverse form. It is *P. nova* as previously interpreted by me, at least in part, but it is not *Dalea nova* Ulbrich, a species similar in foliage and pubescence but with a very different calyx, the teeth minute.

I notice that some one has proposed that *Dalea* supplant *Parosela* by adding the former name to the list of nomina conservanda. This proposal is admission that the question as to which name is really "correct" under the Rules can not be determined clearly enough to make the decision satisfactory to every one. Therefore one name or the other must be "conserved" and, in the spirit of the Rules of course the one to choose, other considerations, as here, being about equal, is the one under which fewer species have been described. One of the factors that could be employed in making such a decision is commonly known as "common-sense."

Astragalus Dielsii, spec. nov., subacaulis dense caespitosus 2–3 cm. altus sericeo-pilosus demum glabratus; stipulis vaginantibus valde imbricatis persistentibus; foliis 8–10 mm. longis, 5–7-jugis, foliolis confertissimis vel demum distinctis sessilibus obovatis retusis vix 1 mm. longis; floribus solitariis brevissime pedicellatis 8 mm. longis pallide caeruleis; bracteis membranaceis circa 1 mm. longis;

calycis dentibus anguste triangularibus circa 1.5 mm. longis tubo oblongo-campanulato fere duplo brevioribus, dense cum pilis sericeis albis et nigris intermixtis pubescentibus; vexillo subrotundato 6–7 mm. lato; alis 3–4 mm. longis; legumine subovoideo, 3 mm. longo, 2 mm. lato, apiculato chartaceo glabro (vel fere) dorso sulcato biloculari, loculis ut videtur monospermis.—Peru: Yanashallos, west of Huallanca, Dept. of Ancash, over 5,000 m., Oct. 2, 1922, *Macbride & Featherstone 2479* (type, Field Museum).

Peruvian *Astragali* are either extremely local or variable; few are completely known and many are misinterpreted because compared with misdetermined material. This tiny plant appears to be truly comparable to only two Andean species (which, it happens, are among the few not seen by me): namely, *A. alpamarcae* Gray and *A. casapaltensis* Ball. From the former it differs, as to description, by the fewer and smaller leaflets that are densely and equally pubescent on both sides until in age equally glabrate on both surfaces, and by the narrower, longer, and densely pubescent calyx tube; from the latter by the distinctly fewer leaflets and by the shorter calyx teeth in proportion to the tube.

This silvery-pubescent, closely tufted little plant grew without competition on loose stony slopes, and when collected its pale blue flowers were all but hidden by a light fall of snow.

Astragalus Pilgeri, spec. nov., suffrutex humilis laxe caespitosus subglaber; caulibus diffusis 1–4 cm. longis; foliis viridibus minutissime parceque hispidulis 4–8-jugis (plerumque 6) circa 1.5 cm. longis, foliolis 2–3 mm. longis obovatis retusis conduplicatis; stipulis parvis solum ad basin connatis; floribus 7 mm. longis perbrevisiter racemosis ad apicem pedunculi axillaris folio interdum multo vel interdum paullo brevioris; calyce parce pilis brevibus nigris pubescente 2–2.5 mm. longo, laciniis triangulari-subulatis quam tubo campanulato distincte brevioribus; vexillo subrotundato fere 5 mm. lato; ovario circa 5-ovulato.—Peru: Hacienda Chuchapaya, Valle del Paucartambo, 3,800 m., Feb., 1929, *Herrera 2315* (type, Field Museum).

Perhaps nearest *A. micranthellus* Wedd. among species recorded from Peru, but very distinct in its green, retuse leaflets, free stipules, and larger flowers. It has a superficial resemblance to *A. Hieronymi* Ulbr., but the smaller flowers and short, triangular calyx teeth readily separate it.

Astragalus salubris, spec. nov., pusillus dense caespitosus subpatenter canescenti-strigosus vel subvillosus; caulibus ad 2 cm. longis; stipulis vaginantibus valde imbricatis; foliis numerosissimis longe (circa 1 cm.) petiolatis, plerumque 3–4 cm. longis, erecto-patentibus 10–12-jugis; foliolis ellipticis obtusis vel paullo retusis circa 3 mm. longis, fere 1.5 mm. latis conduplicatis supra glabris;

spicis subsessilibus 6–8 mm. longis; floribus 4–6 ut videtur purpureis vix 6 mm. longis; calycis nigro-pubescentis fere 4 mm. longi dentibus subulatis tubo suboblongo distincte brevioribus; vexillo late obovato 3.5 mm. lato; ovario biloculari, loculis monospermis.—Peru: Cerro de Pasco, Oct. 28, 1927, *Sawada P86* (type, Field Museum).

Very possibly this thrifty, hardy form should be included in one of the several Andean species that are all so similar in general and yet not quite alike. Its subspreading pubescence, however, separates it from most species. In many respects it resembles *A. Brackenridgei* Gray, but that, typically, at least, has larger, oblong leaflets and longer, peduncled spikes with more flowers. The calyx bract of *A. salubris* is white, rather than black-pubescent.

Pithecolobium Merrilli, nom. nov. *P. multiflorum* Merr. Phil. Journ. Sci. Bot. 10: 11. 1915, not Benth. in Hook. Lond. Journ. 3: 320. 1844.

The earlier use of the name *multiflorum* by Bentham for a Brazilian species in this genus is not recorded in the *Index Kewensis*. The Philippine plant described by Merrill may most appropriately bear the name of its well-known author.

Acalypha Hookeri, nom. nov. *A. cordifolia* Hook. f. Trans. Linn. Soc. 20: 186. 1847, not Griseb. Abh. Ges. Wiss. Gött. 24: 60. 1879.

Pax, contrary to usual botanical nomenclatorial practice, has retained the synonymous name *A. flabellifera* Rusby for the Grisebach species of Argentina and Peru. It is, of course, the more recently described *A. cordifolia* of the Galapagos Islands that requires another name.

Briquetina, gen. nov. Calyx breviter 4–5-lobus. Petala 5, valvata, libera, oblonga, lamina medio incurva et inflexa, laevigata, intus linea longitudinali elevata praedita et etiam ad medium transverse incrassata. Stamina 5 petalis paullo breviora et eis alterna, filamentis superne valde dilatatis glabris; antherae erectae, loculis ovato-oblongis, connectivo haud crasso. Discus nullus. Ovarium liberum, 1-loculare; stylus brevis, conicus, stigmatibus subdiscoideo; ovula 2 ut videtur vulgo 1 evolutum, pendulum, altero ante anthesin abortiente. Fructus drupaceus subglobosus, endocarpio lignoso. Arbores. Folia integerrima, coriacea, penninervia. Flores parvi spicati, spicis brevibus in racemos elongatos dispositis.

Briquetina incarum, spec. nov., arbor magna; ramis teretibus glabris, cortice pallide brunneo nitidulo longitrorsum rimoso; ramulis pedunculisque glabris vel sparse puberulis; petiolis crassis, 7–10 mm. longis; foliis fere ellipticis vel late ovato-ellipticis, basi plus minusve obliquis, apice breviter obtuseque acuminatis, plerumque circa 1.5 dm. longis et 6–8 cm. latis, supra paullo nitidulis, subtus

opacis glabris vel interdum cum pilis crispis brevibus pilosis, tenuissime cartilagineo-undulato-marginatis; nervis medio lateralibusque primariis supra vix notatis, subtus cum venis transversis valde conspicuis; inflorescentiis 5–13 cm. longis, laxis, angustis, fructiferis raro 2 cm. latis, ramulis 0.5–1 cm. longis dense floriferis valde recurvato-incurvatis; floribus sessilibus flavo-viridibus satis fulvo-pilosis; petalis glabris minutissime papillosis suboblongis circa 1.25 mm. longis ad medium definite angustatis et margine inflexis; nervis (vel lineis) mediocriter prominentibus vel elevatis ad medium laminarum incrassato-contractis sed appendicibus destitutis; filamentis glabris, late cuneatis; ovario ovoideo; drupa ellipsoidea obtusa circa 1 cm. diam.—Peru: Muña, Dept. of Huánuco, about 2,200 m., May 23–June 4, 1923, *Macbride 4050* (type, Field Museum). Yanano, Dept. of Huánuco, about 2,000 m., May 13–16, 1923, *Macbride 3748*.

It is rather astonishing if this handsome tree, which I found growing on open rocky hills in central Peru, is really undescribed. It is quite possible that it has already received a name in some family other than the Icacinaceae in which I place it, especially in view of the fact that this family for a long time was a part of another now generally regarded as far removed. But its characters, kindly verified for me by Dr. Briquet, certainly seem to forbid its reference to any other group, and in this family it is not referable to any genus as described. The feature most obviously at variance is probably the inflorescence, which is unusually open and elongate for the family, the flowers more generally being borne in rather close cymes, often paniced. Perhaps it is nearest *Poraqueiba* Aubl. but the petals in that genus are ciliate-appendaged across the middle; *Mappia* Jacq. has pubescent petals and filiform filaments; *Kummeria* Mart. pubescent filaments; and so the list could be extended to include also the new genera described recently for the Amazon region. In addition to these floral differences which traditionally separate genera in the family, there is always for our plant the distinctive inflorescence.

So it has seemed necessary to propose a new genus for it; and in choosing the name *Briquetina* I give myself the pleasure of honoring one to whom botanical honor is so abundantly due.

Paullinia Williamsi, spec. nov., scandens fruticosa subglabra; ramis trigonis leviter vel obsolete striatis; foliis 5-foliolato-pinnatis; petiolis 2–5 cm. longis, 4-sulcatis vel interdum anguste marginatis, parce pulverulentis et ciliato-hirsutulis; rhachidibus conspicue alatis 5 mm. latis; stipulis prominentibus lineari-lanceolatis acuminatis, 7–17 mm. longis; foliolis ovato-lanceolatis subsessilibus vel breviter petiolatis, acute acuminatis, subintegris vel plerumque praesertim ad apicem remote 3–5-dentatis, laxe reticulato-venosis, utrinque

opacis subtus minutissime punctatis, 3–3.5 cm. latis, 8–10 cm. longis; inflorescentiis solitariis, 2 vel 3 cm. longis, molliter puberulentis, ramulis brevissimis, 3–5-floris; pedicellis ad 3 mm. longis; floribus circa 4 mm. longis; sepalis minutissime pulverulentis exterioribus 1.5, interioribus 3 mm. longis; petalis ad basin pilosis.—Peru: Maquisapa on the upper Río Nanay, Loreto, July, 1929, *L. Williams 1196* (type, Field Museum).

In the absence of fruit the relationship of this vine is unknown, but in aspect it resembles strikingly *P. laeta* and *P. subauriculata*, from both of which it nevertheless is at once distinguishable because of the acutely acuminate leaflets, the large stipules, and the triangular stems.

Serjania elongata, spec. nov., fruticosa floribus exceptis glabra; ramis teretibus obscure striatis nitidis; petiolo communi 6–8 cm. longo; foliis 5-foliolato-pinnatis; foliolis integris vel interdum obscure 1–3-undulato-dentatis, late ellipticis, lateralibus breve petiolatis basi apiceque obtusissimis vel rotundatis, terminalibus similibus sed ad basin cuneato-contracto-petiolaris, circa 6 cm. latis et 10 cm. longis, utrinque satis reticulatis nitidulis chartaceis, punctis vel lineolis pellucidis minutissimis et vix notatis; petiolis omnibus nudis; inflorescentiis racemiformibus solitariis tenuibus longe (6–8 cm.) pedunculatis, 2.5–3 dm. longis, laxifloris glabris vel fere glabris; ramulis inflorescentiarum 2–4 mm. longis; floribus circa 4-fasciculatis, pedicellis gracilibus vix 2 mm. longis; sepalis exterioribus glabris circa 2 mm. longis, interioribus paullo tomentulosis, 2.5 mm. longis; petalis glabris (intus ad basin paullo barbatis) obovatis circa 3 mm. longis; filamentis breviter pilosis.—Peru: In sunny brush; flowers cream-colored; La Merced, Junín, Aug., 1923, *Macbride 5511* (type, Field Museum).

Without even young fruit, the generic position of the vine is open to question. I think it is probably a *Paullinia*, but it resembles not at all any species in the nearly complete collections assembled at Munich by Radlkofer. The apparent absence of tendrils and the subpinnate leaves suggest that genus more than *Serjania*, but there is an almost exact simulation in the leaflets of *S. foveolata* and a close approach to those of *S. nutans*, both species with ternate or biternate leaves.

Gustavia caballoensis, spec. nov., arbor; foliis ut videtur ad apicem ramulorum congestis subsessilibus (petiolis 1–3 mm. longis) chartaceo-coriaceis glabris plus minusve praesertim ad apicem undulato-crenulato-serratis oblongo-elliptico-oblancoelatis inferne arcuatum vel interdum cuneatim gradatim reductis, circa 3 dm. longis, basi ipsa subrotundata circa 1.5–2 cm. latis, supra medium 8–12 cm. latis, apice breviter acuminatis obtusis; nervis lateralibus circa 12 supra et subtus mediocriter prominentibus ut etiam venulis tenuissime reticulatis; floribus solitariis axillaribus; pedicellis demum 2.5 cm. longis ad basin 1–3-bracteolatis, ad apicem bibracteolatis;

bracteolis rotundatis 2–4 mm. longis; calycis pulverulenti margine integro vel obscure crenulato; petalis ut videtur subaequalibus late obovatis vel obovato-oblongis 3–3.5 cm. longis pulverulentis; antheris vix 3 mm. longis; fructus subglobularis apice truncatus circa 4 cm. diam.—Peru: Caballo-cocha, Loreto, Aug., 1929, *L. Williams 2240* (type, Field Museum), 2152, 2236(?).

The last collection, in bud and with a section of an immature fruit (from which the description is drawn), has longer leaves with about 20 lateral nerves.

This material very doubtfully represents a new species, but rather than modify the character of any one of the several described forms to which it could thereby be referred, and so perhaps cause confusion, I give it a name. It bears a striking resemblance to *G. Marcgraviana*, *G. Ulei*, and (presumably from description) *G. Poeppigiana*. These three species, however, all have terminal flowers, more or less evidently racemose. The first, with exactly the foliage of this, grows in eastern Brazil, and its terminal flower or flowers seem to have slightly longer anthers. The second and third, which are not clearly distinct from each other, have sessile or shortly pediceled, terminal flowers. In this connection *G. insignis* Linden ex Hook. Bot. Mag. 84: pl. 5069. 1858 may be mentioned. Miers in his treatment of the genus, Trans. Linn. Soc. 30: 177. 1874, refers it to *G. superba* Berg. The latter, however, has long-petioled leaves. The former has the sessile leaves of our plant but they are “spinulose-serrate,” and the calyx is somewhat lobed; otherwise it approaches *G. caballoensis*. No *Gustavia* already collected in Peru is comparable to the one here described, with the possible exception of *G. longifolia*, which has the pedicels bracteate below the middle.

Gustavia mangua, spec. nov., arbor(?); ramulis ignotis; petiolis 5–10 mm. longis; foliis oblongo-lanceolato-oblancoelatis in petiolum longe sensim angustatis basi ipsa acutis, supra medium gradatim latioribus plerumque 6–8 cm. latis, sursum angustioribus et in acumen acutum anguste productis, 3–4 dm. longis, rigide chartaceis, margine subintegris vel distanter crenulato-serrulatis, valde crispato-plicatis; nervis tenuibus supra vix prominulis subtus stramineis et prominentibus glabris, venis transversis tenuissime reticulatis; ut videtur cauliflora; racemis circa 2.5 cm. longis multifloris; bracteis numerosis ovato-acutis 3 mm. longis; pedicellis gracilibus minute pulverulentis paullo sub medium bibracteolatis, 3–3.5 cm. longis; calycis margine integro vel obsolete 4-lobato; petalis circa 8, oblongo-obovatis circa 2.5 cm. longis 7–10 mm. latis, pulverulentis; antheris 2 mm. longis.—Peru: Lower Río Nanay, Loreto, May–June, 1929, *L. Williams 281* (type, Field Museum).

"Mangua," the native name, may serve also as the specific one for this tree which, among Peruvian species at least, resembles most *G. augusta*, from which its almost caudate-acuminate leaves and small flowers readily distinguish it. Its character seems to be definitely at variance with that of any species as described by Miers in his treatment of the genus, Trans. Linn. Soc. 30: 175-188, 1874, as well as with any of the few proposed since that date. Miers' work, however, is not entirely intelligible to me, and I do not know how much reliance can be placed in his alignment.

Grias Neuberthii, spec. nov., arbor(?); ramis ramulisque ignotis; foliis ut videtur sessilibus oblongo-spathulatis maximis breviter acuminatis, sensim ad basin angustatis, supra medium latissimis, majoribus ad 8 dm. longis et 1.5 dm. latis, integris vel leviter undulato-crispatis glabris paullo nitidulis subcoriaceis; nervis lateralibus circa 25 plerumque alternantibus supra vix notatis subtus valde prominentibus, venis utrinque mediocriter prominulo-reticulatis; racemis (e trunco nascentibus?) ut videtur ad 1 dm. longis cinereo-tomentulosis; bracteis 1 cm. longis; pedicellis subangulatis crassis bracteis vix longioribus; bracteolis calycibusque sericeo-tomentulosis; calycibus bibracteolatis (bracteolis oblongis obtusis 8 mm. longis) lobis 4 subrotundatis circa 7 mm. longis; petalis 4 crassis subovalibus circa 3 cm. longis; filamentis crasso-angulatis; antheris oblongis, circa 1 mm. longis; thecis connatis longitrorsum dehiscentibus.—Peru: Caballo-cocha, Loreto, Aug., 1929, *L. Williams 2337* (type, Field Museum).

This tree is immediately distinct from all of the few species described in the genus *Grias* by its inflorescence and connate anthers, but because it is aberrant in character, it is possible that it has been referred to *Gustavia*, most of the species of which are unknown to me. The latter genus, however, has anthers dehiscent by terminal pores, but the cells are connate in the manner of those of this plant. As the androecium is equally expanded, there is no choice of genera, granted that the plant has been placed in the right family, except these two, and as the method of anther dehiscence is the diagnostic character for the genera, there appears to be no reason for including it in *Gustavia*. The material, unfortunately, is poor, the inflorescence being badly broken, and its attachment not indicated. The leaves, broken off above the base, are similar, except for being subopaque, to those of *Grias grandifolia*, a species with glabrate, small-bracted inflorescence and subglobose, separate anthers, as typical for the genus. The native name, "chope," has been recorded also for species of *Gustavia*.

In naming this interesting species for Carl Neuberth, Custodian of the Herbarium of Field Museum for more than thirty years, well-merited recognition is given a conscientious botanical worker.

Combretum Llewelyni, spec. nov., fruticosum (scandens?); ramulis foliis subtus petiolisque parce rufo-lepidotis; petiolis circa 5 mm. longis; foliis supra glabris nitidis subchartaceis late ellipticis vel fere subrotundatis, apice abrupte caudato-acuminatis, 8–10 cm. longis, 5 cm. latis; nervis lateralibus 6–7, supra mediocriter subtus alte prominentibus ad marginem curvatis et cum venis plus minusve definite reticulatis; spicis terminalibus circa 2 dm. longis; calyce 17 mm. longo rubido-lepidoto e basi anguste campanulata vix vel haud constricto, lobis anguste triangularibus basi vix 3 mm. latis, 5–6 mm. longis, acuminatis intus parce lanato-villoso; petalis fere linearibus circa 2 mm. longis; staminibus calycem circa duplo superantibus; samara ignota.—Peru: Along Río Itaya, Loreto, *Llewellyn Williams 143* (type, Field Museum).

Only *C. Loeftlingii* Eichl. and *C. Baslerianum* Mildbr. have calyces that even approach the exceptionally elongate, narrowly toothed ones of this attractive shrub. *C. Llewelyni* also has narrower petals and much broader leaves.

Gunnera peruviana, spec. nov., maxima; ligulis linearibus, remote spinuloseque dentatis; petiolis circa 3 dm. longis foliisque subtus haud spinescentibus sed plus minusve cum pilis spinuliformibus pilosis demum glabris; foliis supra conspicue bullato-rugosis valde scabris vix tuberculatis rotundato-cordatis minoribus circa 3 dm. latis et plerumque prostratis vel adscendentibus, majoribus erectis magnificisque perbreve 5–7-lobatis, lobis late rotundo-ovatis fere integris solum repando-undulatis et minutissime denticulatis; inflorescentiis sessilibus dense spinuloso-pilosis circa 3.5 dm. longis fere oblongis, ramis remotis (rare attingentibus) patentibus plerumque 5–6 cm. longis; bracteis persistentibus conspicuis 1–2 cm. longis irregulariter spinuloso-dentatis glabris anguste ovato-lanceolatis longe acuminatis apice haud vel vix dilatatis; sepalis haud notatis; ovario subgloboso.—Peru: Tambillo, Dept. of Huánuco, May 8, 1923, *Macbride 3583* (type, Field Museum).

So many *Gunneras* have been described which, at least from description, appear to be very similar that one would suppose there must already be a name for every form. But this seems not to be the case and, if there is any constancy in the described characters, it becomes necessary to give new names to the above and following plants. *G. peruviana* is more than likely *G. scabra* R. & P. as to the Muña, Peru, specimen cited by the authors but not as to description, plate, or the Chilean material, which is *G. chilensis* Lam. The latter differs from this plant in its dense inflorescence and deeply, narrowly lobed and acutely serrate leaves. Also, the related *G. Berteroi* Phil. and *G. manicata* Lind. differ from *G. peruviana* decidedly in their leaf dentation. Yet other forms, as *G. rheifolia* Schindl. and *G. commutata* Blume, are otherwise distinct enough, as, for instance,

in their dense inflorescences. If the sepals could be determined as persistent, a comparison could be made with *G. pilosa* Kunth, *G. boliviana* Morong, and *G. apiculata* Schindl., but the spines and pilosity of the first are lacking, as are the smooth leaves of the second, and the acutely lobed foliage and dense inflorescence of the third. Since Schindler monographed the family for *Pflanzenreich* he has described *G. Margaretæ* and *G. Annae*, both from Peru but both ebracteate or nearly so and with narrowly or acutely lobed leaves.

Gunnera Bolivari, spec. nov., ut videtur maxima; ligulis ignotis; petiolis inflorescentisque ubique rubro-purpureis glabris vel glabris; foliis haud profunde obtuseque 5–7-lobatis et obscure repando-dentatis supra viridibus glabris et laevigatis subtus pallidioribus solum ad nervos parce tenuissime pilosis, ut videtur magnis; inflorescentiis ut videtur ebracteatis (bracteis minutis) paullo attenuatis ad apicem longe (fere 1 dm.) pedunculatis circa 3.5 dm. longis, 8–10 cm. latis; ramis valde patentibus numerosis sed haud congestis gracilibus fructiferis vix vel paulo incrassatis, plerumque 5 cm. longis; sepalis aliquid persistentibus; ovario ovoideo.—Peru: Cerro de Cusilluyoc, Dept. of Cuzco, *Pennell 13989* (type, Field Museum).

Apparently very distinct from known species because of its glabrous, essentially ebracteate inflorescence and glabrate leaves, with the possible exceptions of *G. pyramidalis* Schindl. of Juan Fernández, which is more pubescent and has a very pyramidal inflorescence, and *G. Margaretæ* Schindl., which has narrowly lobed leaves.

Bowlesia flabilis, spec. nov., annua suberecta glabrata 2–2.5 dm. alta; caulibus foliisque viridibus sed (praecipue foliis subtus) parce cum pilis plus minusve stellato-ramosis pubescentibus; petiolis (inferioribus) circa 2 cm. longis; foliis circa 1.5 cm. longis, late ovatis vel subrotundatis, basi cordatis, late 5-lobatis, lobis integris mucronulato-acutis; foliis superioribus valde sed gradatim reductis, 3-lobatis vel subintegris, circa 1 cm. longis vel bracteiformibus et 3–5 mm. longis; inflorescentiis sessilibus simplicibus 1–4-floris; fructu nudo sed valde glochidiato-ciliato fere 2.5 mm. longo et circa 2 mm. lato.—Peru: Wood-clearing, Mito, Huánuco, July 23–Aug. 14, 1922, *Macbride & Featherstone 1718* (type, Field Museum).

Among *Bowlesias* with glochidiate fruits this resembles most *B. tenella*, from which its 3-lobed or subentire and greatly reduced upper leaves distinguish it. Its name refers to its habit of growth, to its habitat, and to its specific standing. The last characteristic, however, is shared with most species of *Bowlesia*; quite possibly they are all reducible to about two.

Hydrocotyle Dahlgreni Rose & Macbr., spec. nov., caulibus pedunculis petiolisque plus minusve rufo-hirsutis; caulibus 1–2 mm.

crassis; petiolis 2-3 cm. longis, lamina reniformi-cordata vel suborbiculata usque ad 5 cm. lata lobulato-crenata, lobulis truncatis haud prominentibus, vel manifeste lobata, supra parce adpresseque hirsutula, subtus tenuiter strigillosa; pedunculis circa 1 dm. longis; inflorescentiis simpliciter umbellatis multi(60-80)-floris, circa 2 cm. diam.; pedicellis filiformibus 6-8 mm. longis; petalis ovatis, 1 mm. longis; fructu circa 1.5 mm. crasso orbiculato-reniformi.—Peru: On moist sunny banks at Cueva Grande near Pozuzo, Huánuco, June 23, 1923, *Macbride 4776* (type, Field Museum).

Because of the conspicuous, long, coarse pubescence this plant at once suggests *H. Barbarossa* Cham., which, however, has peltate and lobed leaves. Among species with the leaves not peltate few seem near enough in character to merit comparison, but perhaps *H. callicephala* Cham. with much longer petioles and lobed leaves and the recently discovered *H. tambolomensis* Wolff with much finer pubescence and lobate leaves are related.

Dr. Rose proposed naming this plant for the collector. I have, therefore, felt it my privilege to change the name and share in the publication. Apparently an unusually distinct species, it gives me pleasure to name it for a botanist who is first a scientist.

Weigeltia nanayensis, spec. nov., fruticosa pumila; ramulis glabris praeter apicem minute parceque rufo-lepidotis; petiolis 1.5-2 cm. longis; foliis elliptico-lanceolatis basin versus gradatim attenuatis, apice plerumque acuminatis, circa 1.5 dm. longis, 5 cm. latis, chartaceis utrinque prominulo-reticulatis; punctulis paucis subtus vix notatis; racemis densifloris circa 2 cm. longis; pedicellis bracteolis multo brevioribus circa 2 mm. longis; floribus 4-meris vix 2.5 mm. latis; lobis calycinis ovato-acutis plus minusve dense nigro-punctatis ut etiam petalis duplo longioribus obtusis; staminibus petalis subaequalibus, filamentis alte insertis gracilibus, antheris subrotundatis haud emarginatis vel punctulatis dorso medio affixis.—Peru: Lower Río Nanay, *Williams 658* (type, Field Museum).

A specimen in bud from the same locality (657) is probably the same. It has broader leaves (to 6.5 cm.) and erect inflorescences about 5 cm. long. The species is rather aberrant in *Weigeltia*, but its regularly lobed calyx and its roundish, dorsally fixed anthers seem to forbid referring it to any other genus, though the superficial resemblance to *Cybianthus psychotrifolius* Rusby is striking. Perhaps only one genus is concerned, as at one time considered. Even so, this shrub is distinguishable from Rusby's by its very thin, reticulate, sparsely punctate foliage.

Stylogyne amplifolia, spec. nov., arbuscula glabra; foliis ellipticis vel oblongo-ellipticis breviter acuminatis basi late cuneato-acutis plerumque 1 dm. latis et 2.5-3 dm. longis, integerrimis vel

leviter undulato-crenulatis, chartaceo-coriaceis supra aliquid nitidis venis paullo notatis, subtus densissime reticulato-venosis, utrinque plus minusve dense punctatis; petiolis circa 1 cm. longis antice valde alatis; inflorescentiis axillaribus et lateralibus solitariis vel fasciculatis paucifloris vix 1 cm. longis; floribus ignotis ut videtur racemoso-umbellatis; bracteolis persistentibus anguste ovatis acutis circa 1.5 mm. longis; pedicellis fructiferis ad 5 mm. longis; sepalis plerumque 5 breviter connatis vix 1.5 mm. longis ovatis obtusis dense glandulolineatis, punctis valde elongatis, margine fere nudis membranaceis haud ciliolatis; drupis globosis fere 6 mm. crassis valde cum glandulis rubris elongatis rugulosis.—Peru: Caballo-cocha, Loreto, *L. Williams* 2117 (type, Field Museum), 2081. Lower Río Nanay, *Williams* 587(?).

Apparently this small tree is referable to *Conomorpha* or to *Stylogyne*, and I have placed it in the latter genus largely because its sepals are more typical for that group. It is only on the inflorescences (as interpreted) that it has been eliminated from other genera. These are in mature fruit and broken, but seemingly the flowers were pseudo-racemose or subumbellate. The large leaves, glabrousness, persistent bracts, and lineate (not punctate) glandulosity constitute a combination of characters apparently not described for any species in either of the genera considered.

Ditassa Schlechteri, nom. nov. *D. montana* Schlechter, Medel. Herb. Leid. 29: 13. 1916, not Decaisne in DC. Prodr. 8: 576. 1844.

The earlier use of the name *montana* in this genus precludes its acceptance for this recently discovered Bolivian species.

Blepharodon nitidum (Vell.), comb. nov. *Cynanchum nitidum* Vell. Fl. Flum. 3: pl. 74. 1827; text 121. 1825. *B. diffusum* Dcne. in DC. Prodr. 8: 603. 1844.

Decaisne has referred the plant of Vellozo unquestionably to his own *B. diffusum*.

Metastelma Schlechteri, nom. nov. *M. ditassoides* Schlechter, Medel. Herb. Leid. 29: 13. 1916, not Schlechter, Notizbl. 6: 175. 1914.

In naming this Bolivian plant Schlechter evidently overlooked his own use of the same species name for a Brazilian *Metastelma*.

Tassadia Rusbyi, nom. nov. *T. Sprucei* Rusby, Bull. Torr. Club 25: 498. 1898, not Fourn. in Mart. Fl. Bras. 6^a: 229. 1885.

It is not obvious that this Rusbyan species is referable to one previously described.

Prestonia amazonica (Benth.), comb. nov. *Haemadictyon amazonicum* Benth. in Mart. Fl. Bras. 6²: 166. 1860.

The union of *Haemadictyon* and *Prestonia* seems to be universally accepted, but I do not find that this excellent Amazonian species has been transferred.

Odontadenia anomala (Heurck & M. Arg.), comb. nov. *Anisolobus anomalus* Heurck & M. Arg. Obs. Bot. 160. 1870.

Odontadenia Benth. antedates *Anisolobus* A. DC. by three years, and this Peruvian species does not seem to have been named under the former genus.

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SPERMATOPHYTES, MOSTLY PERUVIAN—IV

J. FRANCIS MACBRIDE

In presenting another paper written at the Berlin-Dahlem herbarium, I acknowledge with gratitude my continued indebtedness to my friendly hosts. Because of the complete freedom of study permitted at Dahlem, it has been possible to elucidate Peruvian types deposited there, to, I trust, their better understanding. Misdermination of collections is so frequent because of misinterpretation of descriptions, even when perfectly drawn, that any aid, however imperfect, should prove helpful. I hope, therefore, that my attempt to interpret the Dahlem types, as they concern Peru, will be a practical evidence of my appreciation of the privileges enjoyed in research in that great herbarium.

The present paper includes descriptions of two new species of *Scleria* by Mr. R. Gross of Berlin, based upon material obtained by Field Museum expeditions.

1. NEW CYPERACEAE

Scleria Williamsii R. Gross, spec. nov. Culmus 3–1 mm. in diam., triqueter, simplex (?), firmus, sparsim hirtus, in angulis laevis, partes circa 56 cm. altae. Vaginae angustae, circa 3 cm. longae, multistriatae, minute hirtae, ore truncatae, dense hirtae. Folia circa 24–29 cm. longa, 6 mm. lata, plana, subrigida, supra subtilissime celluloso-reticulata, nervis 2 prominentibus, glabra vel glabrescentia, in parte superiore perscabra, subtus carinata, minutissime hirta, in marginibus laevia. Panícula terminalis altera partiali axillari multo minore addita 6–8 cm. longa, 4–7 cm. lata; paniculae axillares (2) 7–11 cm. lg., 4 cm. lat., pedunculi 4.5, 2.5, (7) cm. vel 4, 3.5, (11) cm. lg.; rami 3, 4 vel 7, divaricati, basi ochrea vaginata et bractea (circa 1–2 cm. lg.) praediti, inter se circa 10, 8, 7, 8, 5, 10, 5 mm. vel 10, 9, 9, 7, 7, 10, 10, 7 mm. distantes, circa 4, 3, 2.5, 2, 1.5, 1, 1, 0.5 cm. lg., puberuli, 5-, 4-, 3-, 2- vel 1-stach. Spiculae unisexuales, solitariae, interdum longe pedicellatae, 6 mm. longae. Squamae 4–6, distichae, chartaceae, ovato-acuminatae, carinatae, fere glabrae, viridescentes, margine rubescentes. Nux quam squamae brevior globoso-trigona, circa 4 mm. longa, 3 mm. lata, alba (rarius pallide virescens), maculis leviter obscuris, minute verrucosa, parce minute pilosa, rostrum conicum plus minusve recurvum. Discus trilobus, lobi rotundati, concavi, marginibus involutis, chartaceo-coriacei, pallide brunnei.—Peru: Alto Río Huallaga, Dept. San Martín, alt. 360–900 m., August 12, 1929, *Llewelyn Williams 5823* (type, Field Museum).

Die Species ist entfernt verwandt mit *S. tenacissima* Nees oder *S. flagellum* Sw., aber sie weicht ganz erheblich ab. Recht auffällig ist die umgebogene Spitze der Nuss, ein ganz charakteristisches Merkmal.

Scleria Macbrideana R. Gross, spec. nov. Culmus 3–1 mm. in diam., triqueter, in angulo retrorsum remote tenuiter spinulosus, scandens (?), vero-similiter subramosus, partes (solum visae) 37, 48 cm. altae. Vaginae 3.5–3 cm. lg., submicroscopice hirtae, multistriatae, ore subtruncatae vel abbreviato-ovatae, breviter ciliato-hirtae. Folia (vagina inclusa) circa 23–31 cm. longa, 5 mm. lata, anguste vaginata, linearia, longe acuminata, plana, supra nervis 2 prominentibus, fere glabra vel basi glabrescentia, subtus leviter carinata carina margineque retrorsum tenuiter spinulosa. Paniculae 5 adsunt, 4 axillares, laxae divaricatae, 14.5, 14.5, 12.5, 6, 5.5 cm. longae, 3.5 cm. latae; pedunculi 9, 9, 8, 2.5 cm. lg.; rhachis scabriuscula; rami 6–7, plus minusve horizontales, scabri, inter se 10, 10, 4, 4, 6, 4, 5 mm. vel 12, 10, 9, 5, 6, 4, 4 mm. distantes, basi ochrea crasso-vaginata bractea setacea (circa 3 mm. lg.) praediti; inferiores plerumque 4-stach. vel -flor. (rarius 2), 2, 2.5 vel 3.5 cm. lg., partes circa 11, 5, 4, 3 mm. lg.; superiores 1- vel 2-stach. Spiculae unisexuales, solitariae, pedicellatae, ellipticae, 5 mm. lg., 3 mm. lat.; masculae paucae. Squamae circa 9, sursum longitudine accrescentes, ovatae, carina excurrente, glabrae, rubridae. Nux conspicue exserta late conica, 3 mm. longa, 2 mm. lata, minutissime transversim albo-pilosa, intense violacea, basi saepe alba. Discus obpyramidalis, lobi crassocoriacei, irregulariter undulati, flavido-rubri.—Peru: La Victoria on the Amazon River, Dept. Loreto, August 19, 1929, *Llewelyn Williams* 2571 (type, Field Museum).

Diese Art ist leicht zu erkennen an den kleinen, breit kegelförmigen, intensiv violetten, am Grunde oft weissen Nüssen, die in Querreihen mit äusserst feinen Härchen bedeckt sind; ferner an den lockeren Rispen mit fast wagerecht abstehenden Aesten, an denen entfernt die einzelnen Aehrchen stehen. Die vegetativen Teile erinnern an *S. flagellum* Sw. und *S. tenacissima* Nees.

Rhynchospora Killipii R. Gross, spec. nov. Species imperfecte nota. Culmus circa 1.20 m. altus (pars superior 60 cm.), 3–2 mm. in diam., strictus, triqueter faciebus concaviusculis, dense striatus, glaber. Internodia 22.5, 16 cm. longa. Vaginae superiores 3.5, 2.5 cm. lg., glabrae, profunde sinuosae (circa 1 cm.). Folia superiora (1 et 0.5) circa 70 cm. longa, circa 12–14 mm. lata, linearia, longe attenuate acuminata, multistriata, supra subtilissime celluloso-reticulata; subtus tenuiter carinata, minutissime puncticulata, margine brevissime spinulosissima. Inflorescentia paniculata, stricta, 21.5 cm. longa, 8 cm. lata, interrupta (10, 1.5, 1, 1, 1, 1 cm., 5 mm., 5, 5, 5, 5 mm.); terminalis (altera partiali axillari 10 cm. distante addita). Bractee 3 inferiores inflorescentiam longe superantes (bractea tertia 18 cm. longa, 7 mm. lata) plus minusve puberulae

margine ciliatae, interdum spinulosissimae; superiores perangustae, valde reductae. Rhachis, rami, ramuli dense breviter piloso-hirsutuli. Ramus axillaris stricte erectus, 9 cm. longus; rami 4 plus minusve patentes (6, 4, 4, 3.5 cm. longi); superiores (circa 8) approximati (2.5–1 cm.); ramuli circa 1.5–0.5 cm. longi, dense ramosi. Bracteolae 2 diversae, setaceae, ovatae. Spiculae brevissime pedunculatae vel subsessiles, solitariae, superiores saepe approximatae, oblique patentes, conico-lanceolatae, acutae, ad 17 squamae, 1-nucigerae, 5–7 mm. lg., 1 mm. lat. Squamae chartaceae, ellipticae, carinatae, mucronatae, stramineae, inferiores 10 vacuae, 11 nuculigerae; superiores involutae, lanceolatae, breviores, steriles. Stamina 3; filamenta brevissima; antherae 3 mm. lg. Setae 5, aequilongae, antice scabridae. Nux nimis juvenilis; stylus divisus.—Peru: Dept. Junín, Pichis Trail, Yapas, 1,350–1,600 m., dense forest, *Killip & Smith 25566* (type, Field Museum).

Vorhanden ist ein festgeklebtes Bruchstück von 60 cm. Länge; neben der üblichen Standortsangabe steht auch die Notiz "to 4 ft. high." Auffällig ist die steife dickstielige terminale Infloreszenz mit einer 10 cm. tiefer stehenden axillaren, die dicht am Halm aufwärts ragt. Die einzelnen Aeste sind mit ihren ziemlich gleichmässig verteilten Aestchen einander sehr ähnlich. Ein recht auffälliges Merkmal sind die 3 sehr langen (2 sind allerdings nur unvollständig vorhanden) gewimperten, unteren Brakteen, an der Terminal-Infloreszenz und auch die sehr zahlreichen (cr. 17) Schuppen der Aehrchen. Die Nüsse sind leider so wenig entwickelt, dass darüber nichts gesagt werden kann.

***Calyptrocarya Poeppigiana* Kunth, forma *grandifolia* R. Gross, f. nov.** Folia ad 2.5 cm. lata, 6 dm. longa.—Peru: Mishuyacu near Iquitos, *Klug 377* (type, Field Museum).

Although a number of collections of this species are before me, the leaves of none approach in size those of this material. It seems, therefore, worthy formal designation.

2. MONOCOTYLEDONS, MOSTLY SCITAMINEAE

***Podocarpus Harmsianus* Pilger, Pflanzenr. IV. 5: 68. 1903.**

The Arnold Arboretum apparently regards this species and *P. montanus* (Willd.) Lodd. as the same, or at any rate that institution is authority for the identification of *Killip & Smith 22480* as the latter, although Professor Pilger refers it to the former. Little known as both species are, they appear to be well distinct, as the leaf nerve in *P. montanus* is impressed, and in *P. Harmsianus* not at all.

Elodea Potamogeton (Bert.) Espinosa, Rev. Chil. Hist. Nat. 31: 150. 1928. *Anacharis Potamogeton* (Bert.) Vict. Contr. Bot. Montr. 18: 41. 1931.

In the last paper of this series I inadvertently published the above combination as my own. Frère Marie-Victorin has given a helpful resume of the status of this group, but his arguments for discarding the name *Elodea*, which might have been well taken before the botanical congress of 1930, are of questionable significance now, since the case is one requiring interpretation of the rules and to be decided legally only by committee.

Dichromena Kuntzei (Clarke), comb. nov. *Rhynchospora Kuntzei* Clarke, Kew Bull. Add. Ser. 8: 39. 1908. *R. Uleana* Kükenth. fide Gross in Herb. Dahlem.

Mr. R. Gross has referred the plant of Ule in Herb. Dahlem to this species which, as remarked by Clarke, simulates *Pleurostachys macrantha*. It supports, from a practical standpoint, my suggestion (Field Mus. Bot. 11: 6. 1931) that at least in regional treatments the group *Pleurostachys* is best regarded as a section of *Dichromena*.

Dichromena cariciformis (Nees), comb. nov. *Rhynchospora cariciformis* Nees in Mart. Fl. Bras. 2¹: 145. 1842. *R. trichophora* Nees, loc. cit. fide R. Gross.

This very unusual species with carex-like spikes has been rediscovered by Williams (3457) on the Río Itaya, and in the same region by Killip and Smith, according to Mr. Gross. These are, apparently, the first Peruvian records.

Cyperus cayennensis (Lam.) Britton, var. **redolens** (Maury) R. Gross, comb. nov. *C. redolens* Maury, Mém. Soc. Phys. Genève, 31: 126. pl. 36. 1889.

This plant is distinguishable from the typical form only by the more numerous flowers—6–8 (10)—and it may, therefore, be treated as a variety. The necessary combination does not seem to have been made under the earliest specific name, i.e. *C. cayennensis* (*C. flavus* Nees).

Carex fecunda Steud., var. **atropurpurea** (Boeckl.), comb. nov. *C. atropurpurea* Boeckl. Linnaea 39: 150. 1875.

In Field Mus. Bot. 8: 113. 1930 I suggested that this is a recognizable plant. Recently, in looking at the type again with Mr. Gross, the fact has been called to my attention with renewed force, therefore the Boeckler name may be removed from synonymy, as indicated above.

Paepalanthus aequalis (Vell.), comb. nov. *Dupatya aequalis* Vell. Fl. Flum. 1: pl. 85; text 36. 1827. *P. blepharocnemis* Mart. ex Koern. Fl. Bras. 3¹: 376. 1863.

As recent an authority on this group as Ruhland has questioned not at all the equality of the names of Vellozo and Martius; the former, therefore, having priority, is the name to be retained.

Juncus andicola Hook. Icon. 8: pl. 714. 1848 and *J. Lesueurii* Boland. Proc. Calif. Acad. Sci. 2: 179. 1863 are undoubtedly very close and perhaps the latter were better treated as a variety, but so far as Peruvian material is concerned the problem is easy, as the Californian plant certainly is not represented there, in spite of herbarium determinations to the contrary. It very doubtfully occurs in Chile and Argentina, the flowers and anthers being smaller. Buchenau's separation is not clear (cf. Pflanzenr. IV. 36: 126, 147–148. 1906) because he distinguishes the species on the proportionate length of anthers and filaments. The diagnostic character of *J. Lesueurii* seems to me to be its large anthers, nearly 2 mm. long, on a filament 0.5 mm. long. It is typically a slender plant with few-flowered or capitate inflorescence, the segments bicolored and the stems shortly sheathed at base (3–6 cm.). *J. andicola* Hook. has small anthers at most 1.25 mm. long or shorter, on filaments 0.5–1 mm. long. The *proportion* between anther and filament is therefore not a satisfactory means of distinguishing the species, but there seems to be a constant difference in the *size* of the anthers.

J. andicola was described from Ecuadorian material, and typically its anther is 1.25 mm. long, its filament nearly 1 mm. long. It has rather slender, wiry stems sheathed at base for a length of 1.5 dm. and many nearly concolored and dark flowers. It seems to be exactly matched by Colombian and Bolivian specimens, and Argentina and Chile material (referred to *J. Lesueurii*) probably belongs to it, at least as a variety.

In Peru also it has been collected, but not in exactly typical form, occurring there only as a much more robust plant, the stems above the elongate basal sheaths 5–12 mm. thick, and greatly prolonged, not infrequently 2 dm., above the inflorescence. This Peruvian state is puzzling in that it seems to exist in two forms. One, *Weberbauer 3283* from the Yananguco See in Ancash, referred by Buchenau to *J. Lesueurii*, is nearly *J. andicola* except for the greatly elongate stems. It is very young, but the anthers, though about twice as long as the filaments, are small, that is, 1 mm. long. The other form, referred by Buchenau to *J. andicola*, is so at variance that it seems

worth while to regard it as a variety, even if the plant first described is a connecting state. This is *Weberbauer 1367* from Pucará, Puno. In its almost gigantic size, its pale flowers, and particularly its smaller stamens it seems nearly specifically separable, but these characters are admittedly variable. This plant, so interesting even if only a variant, may bear the name of Mr. Schulz-Korth, and give me also the opportunity of expressing thus my indebtedness for many courtesies in herbarium work.

Juncus andicola Hook., var. *Schulz-Korthii*, var. nov., robustus, 10–12 dm. altus; caulibus crassis diam. circa 11 mm.; cataphyllis ad 1.5 dm. longis; bracteis valde elongatis; inflorescentiis dense congestis; tepalis 5–6 mm. longis pallide brunneis vel lateribus castaneis; antheris 1.2 mm. longis; filamentis circa 0.5 mm. longis; capsula vix 4 mm. longa; seminibus fuscis circa 0.6 mm. longis.—Peru: Pucará, Dept. Puno, 3,600 m., forming large stands in a lake, *Weberbauer 1367* (type, Berlin-Dahlem).

I acknowledge with appreciation the kindness of the Director of the Dahlem Museum and of Dr. Markgraf, the curator of the family, in permitting the above publication, based entirely on a study of material in their care.

Smilax gilva, spec. nov., gracilis; ramis ramulisque teretibus 3 mm. crassis laevibus viridibus non lineatis, punctatis, tuberculatis vel aculeatis; petiolis tortuosis circa 1 cm. longis, basi anguste vaginantibus, vaginis valde apiculatis ut videtur non cirrhiferis; foliis ovatis vel ovato-lanceolatis circa 10–12 cm. longis, 3.5–5.5 cm. latis vel interdum bracteiformibus, oblongo-lanceolatis, circa 2 cm. latis, basi late cuneatis, acutis, apicem versus paullo angustatis vulgo subabrupte obtuseque caudato-acuminatis, acumine 5–7 mm. longo, utrinque nitidulis, chartaceo-coriaceis fere opacis sed pellucido-punctatis, haud lineatis, undique bene laxaque reticulatis, solum subtus nervis 3 prominulis praecipue costa media, omnibus basalibus; pedunculis masc. circa 3 mm. longis; receptaculis cylindraceo-globosis 4 mm. longis; pedicellis plerumque 6 mm. longis, sepalis spatulato-obovatis 4 mm. longis, petalis paullo longioribus; antheris non apiculatis filamentis duplo longioribus.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 874* (type, Field Museum).

Dr. Gleason has referred this to *S. cumanensis* Willd., which he perhaps interprets broadly enough to include it. On the specific basis established by DeCandolle, Monogr. 1. 1878, it is at variance to the type (*Herb. Willd. 18396*) in its much heavier, obtusely caudate-acuminate leaves, ellipsoid receptacles, nearly twice as large flowers, and obtuse anthers. In DeCandolle's treatment it would be sought, it seems to me, among species Nos. 57–64 or 136–141. Among the first it is most comparable to *S. floribunda* Kunth and

S. staminea Griseb. Its caudately acuminate, laxly reticulate leaves and smaller flowers distinguish it from the former and its subopaque leaves, longer petioles, more shortly vaginate, and broader perianth segments from the latter. Among the second group (Nos. 136-141) it is more at variance in its smaller flowers and different foliage.

In proposing a number of new species of *Smilax* it may not be amiss to remark that they are probably new forms only in the sense that their characters do not conform exactly to those of any species described, at least so far as I have been able to determine. And, more to the point, it has not seemed to me practical to interpret described species liberally enough to include considerable variations, for to do so would have the effect of breaking down the entire classification carefully worked out by DeCandolle. When *Smilax* is really known, the number of species recognized today will be considerably reduced, but for Peru, at least, there is yet a paucity of material, so that the true limits of species can only be guessed. Especially is the problem difficult because few species are known positively in fruit and flower, collectors always securing one or the other in accord with the particular season. Furthermore, few collections show entirely mature leaves and old stems or branches. Some species, including mine, may thus be juvenile states, or their apparent differences may be sexual rather than specific.

Smilax colubrina, spec. nov., ubique tortuosa; ramis ramulisque gracilibus teretibus haud lineatis et obscure vel vix nigro-punctatis exaculeatis ad 2 mm. crassis; petiolis flexuosis tarde cirrhiferis solum ad basin inconspicue vaginatis, 1-1.5 cm. longis; foliis undique nitidulis laxe reticulatis, nervis lateralibus 2-3 basalibus supra haud subtus paullo prominulis solum costa media praecipue subtus valde notata, subcoriaceo-opacis (non punctatis), late ovatis vel ovato-lanceolatis, breviter acuminatis vel acutis plerumque circa 9 cm. longis et 4 cm. latis, margine undulatis; pedunculis masc. 3-5 mm. longis; pedicellis circa 5 mm. longis; floribus albis vel ut videtur interdum flavis 2-2.5 mm. longis numerosis (circa 25), segmentis anguste oblongis; antheris filamentis multo brevioribus exapiculatis.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug* 1327 (type, Field Museum); also, apparently, 886 and 867.

Referred with *Smilax gilva* to *S. cumanensis* Willd. by Dr. Gleason, from both of which its completely opaque leaves appear to distinguish it. From the former it is further separable by its smaller and different flowers. It seems to me to belong to species Nos. 97-118, and to resemble most *S. irrorata* Mart., from which, according to description, it differs in its eelineate stems, shortly vaginate petioles,

and many flowers. In aspect it simulates *S. staminea* Griseb., which, however, has larger flowers.

Smilax vaga, spec. nov., liana; ramis teretiusculis vel subangulatis 2 mm. crassis, scabriusculis et ad nodos tuberculatis ubique plus minusve aculeatis, aculeis brevibus fere minutis; ramulis angulatis tortuosis fere laevigatis; petiolis 5–7 mm. longis, bene vaginatis et cirrhiferis; foliis ovatis basi rotundatis mucronulato-acutis plerumque circa 7 cm. longis, 3.5 cm. latis, margine distincte crassocartaligineis, membranaceis, densissime lucido-punctatis, ubique mediocriter reticulatis, nervis 5 paullo notatis, pallido-viridibus vix nitidulis; pedunculis fem. 3–4 mm. longis; receptaculis globosis vix 3 mm. crassis; pedicellis (ut videtur 12–15) circa 5 mm. longis; fructibus circa 1 cm. crassis.—Peru: Rumizapa near Tarapoto, Dept. San Martín, *Williams 6757* (type, Field Museum).

Among Peruvian species to be distinguished particularly only from *S. cumanensis* Willd., which is unarmed and smooth; but perhaps it has wandered, in which case its character seems to ally it to species 97–119, possibly to *S. cissoides* Griseb. or even to some other species, since its flowers are unknown. Precisely, however, it “fits” no description. If it is a new endemic, its prickles and well-developed tendrils suggest that its name, considered locally, may not be inappropriate.

Smilax Williamsi, spec. nov., valde tortuosa; ramis ramulisque subangulatis vel teretiusculis laevibus gracilibus epunctatis et elineatis paullo angulato-striatis vix 1.5 mm. crassis; petiolis 7–10 mm. longis ad medium vaginatis plerumque valde cirrhiferis; foliis ellipticis vel ovato-ellipticis basi apiceque rotundatis, vel apice fere truncatis brevissime mucronulatis, plerumque circa 8 cm. longis, 4 cm. latis, subcoriaceis, fere opacis, haud punctatis (vel obscure pellucidis), undique dense prominulo-reticulatis et pernitidis, nervis lateralibus vix notatis; pedunculis junioribus circa 3 mm. longis; receptaculis globosis, 3 mm. crassis; floribus ignotis.—Peru: In sandy soil, Tarapoto, Dept. San Martín, *Williams 5432* (type, Field Museum).

Notwithstanding the lack of flowers I venture to give this specimen a name because the foliage seems to be entirely distinctive. No species approaches it more, apparently, than the ornate-lineate *S. irrorata* Mart., also of Peru.

Smilax magnifolia, spec. nov., liana venusta; ramis vel ramulis subteretibus leviter striatis laevigatis haud punctatis mediocriter robustis circa 5 mm. crassis; petiolis valde curvatis circa 2.5 cm. longis ad basin vaginatis et plus minusve breviter cirrhiferis; foliis elongato-ovatis basi rotundatis, breviter acutis, apice ut videtur breviter obtuseque acuminatis, circa 3 dm. longis ad 11.5–12.5 cm.

latis, e basi ad apicem gradatim sed paullo angustatis, fere subcoriaceis subnitidulis opacis, nervis venisque solum subtus mediocriter prominulis, nervo centrali praecipue distincto, supra valde impressis; pedunculis valde compressis circa 1 cm. longis; receptaculis ovalibus fere 7 mm. longis, circa 5 mm. latis; floribus ignotis; fructibus ut videtur negris.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 1000* (type, Field Museum).

Apparently comparable only to *S. phyllobola* Griseb., and seemingly distinct by the much larger leaves, longer and flat peduncles, and oval receptacle.

Smilax bella, spec. nov., liana verruculosa; ramis (vel ramulis?) leviter angulatis breviter parceque aculeatis et dense tuberculatis circa 3.5 mm. crassis; petiolis circa 2 cm. longis breviter vaginatis; foliis fere rigido-coriaceis supra nitidis griseo-viridibus subtus pallidioribus supra obscure laxaque reticulato-venosis, nervis lateralibus haud prominulis vel impressis, oblongo-elliptico-lanceolatis, basi rotundato-acutis, apice late acuminatis, circa 2.5 dm. longis et 7.5–9 cm. latis; pedunculis fem. vix 5 mm. longis; pedicellis circa 3.5 mm. longis; floribus pernumerosis (circa 50–60), viridibus, vix 2 mm. longis, segmentis lineari-oblongis; ovario subgloboso.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 374* (type, Field Museum).

In foliage there is a striking similarity to the smooth-stemmed *S. syphilitica* Willd., and no doubt the relationship lies in the vicinity of that species; perhaps with *S. insignis* Kunth or *S. japicanga* Griseb., both with much thinner leaves; or, more likely, with *S. aequatorialis* (Griseb.) DC. or *S. cinnamomea* Desf., both with longer peduncles or shorter petioles, but, more especially, with deeply impressed lateral nerves above.

Eucharis Castelnaeana (Baill.), comb. nov. *Calliphruria Castelnaeana* Baill. Bull. Mens. Soc. Linn. Paris 143: 1135. 1894.

This little-known plant must, if one may judge from description, be a true *Eucharis*, notwithstanding its simulation of *Calliphruria* in its small and narrow corolla, for the latter genus has free filaments winged below and toothed at each side.

Eustephia armifera, spec. nov., conspicue foliosissima; bulbi ovoidei 4 cm. diam. in collum fere 1.5 dm. longum attenuati; foliis circa 8 oblongo-linearibus 2–3 dm. longis fere ubique 12–14 mm. latis, laxis vel ut videtur interdum prostratis; pedunculis circa 1.5 dm. longis plus minusve compressis; bracteis 2–3, majoribus fere 4 cm. longis, circa 1 cm. latis, subtruncatis; floribus circa 5, subsessilibus; perigonio 2.5–3 cm. longo, tubo vix notato in faucem sensim ampliato, laciniis definite inaequalibus ovatis subacutis 6–8 mm. longis; filamentis liberis 5 mm. longis anguste alatis ad apicem undique valde dentatis; antheris circa 7 mm. longis; stylo stamina paullo

superante sed incluso, stigmatē irregulariter discoideo-folioso.—Peru: Grassy places between shrub-wood, 3,100 m., Marcapata, Dept. Cuzco, *Weberbauer 7806* (type, Field Museum).

This interesting plant seems referable only to *Eustephia*, from which it differs in its subsessile flowers and the position of the two lateral filament teeth immediately beneath the anther. The stamen therefore suggests in form the ancient spear or trident. The illusion is perfect upon the fall of the anther. Thus an innocuous-appearing plant is armed with concealed weapons! The collector noted the flowers as "blood-red without, yellowish within."

Dioscorea fodinarum Kunth, Enum. Pl. 5: 405. 1850. *D. venosa* Uline ex Knuth, Notizbl. 7: 190. 1917. *D. venosa* Uline, var. *effusa* (Griseb.) Uline ex Knuth, op. cit. 191. *D. effusa* Griseb. Kjoeb. Vidensk. Meddel. 161. 1875.

Knuth regards these collections as representing one variable species. He has, however, failed to accord with modern nomenclatorial practice of using the first published name as the species name. If his interpretation of the plant is correct, as seems probable, his two varieties must be referred to the name of Kunth rather than to that of Uline.

Heliconia Standleyi, spec. nov., robusta circa 2 m. alta glabra; petiolis circa 1.75 m. longis; foliis ad fere 3 m. longis, ad 6 dm. latis, chartaceo-coriaceis, nervis lateralibus mediocriter prominentibus, costa media 1 cm. crassa; inflorescentia pendula ad fere 2 m. longa; rhachidibus valde flexuosis manifeste 4-angulatis ad 1 cm. crassis; bracteis 2- fere 4 cm. remotis 9-10 cm. longis 3-3.5 cm. latis, obtusis vel vix acutis, late cymbiformibus; pedicellis numerosis circa 1 cm. longis; bracteolis pallidis anguste lanceolatis acuminatis circa 6 cm. longis; floribus ignotis.—Peru: Iquitos, Dept. Loreto, *Killip & Smith 27444* (type, Field Museum).

A magnificent plant, nearest, I think, to *H. rostrata* R. & P., but widely at variance in the character of rachis and bracts. The short and blunt bracts are markedly different from the tapering ones of *H. rostrata* and *H. Bihai* L., to which species it is also allied.

Heliconia tenebrosa, spec. nov., ut videtur glabra 5 dm. alta; petiolis manifeste nitidis 1.5-2 dm. longis, vix 2 mm. crassis; foliis nitidulis ut videtur intense viridibus, subellipticis, basi breviter acutis, apice longe acuminatis, circa 2.5 dm. longis, 7-8 cm. latis; inflorescentia erecta vix 2 dm. longa; bracteis inferioribus 7-8 cm. longis ad basin 1.5 cm. latis ad apicem valde angustatis, acutis, circa 1 cm. remotis; rhachidibus distincte curvato-flexuosis; floribus 3 cm. longis leviter curvatis ad basin 4 mm. latis; staminibus liberis exsertis, antheris 5 mm. longis.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 1089* (type, Field Museum).

Allied to *H. cannoidea*, but the petioles long and slender. The relatively close inflorescence distinguishes it easily from *H. Schumanniana* and *H. aureorosea*.

Costus zingiberoides, spec. nov., ut videtur herba humilis; caulibus gracilibus 5–6 mm. crassis; foliis breviter petiolatis linearilanceolatis 1.5–2 dm. longis, 12–15 mm. latis, longe acuminatis, glabris, vaginis sparse hirsutulis; spicis obovoideo-cylindraceutis vel demum oblongo-cylindraceutis ad 10 cm. longis et 2.5 cm. crassis; bracteis late ovatis vix acutis coriaceis striatis puberulentis vel glabris infra apicem linea callosa ad 4 mm. longa munitis; corollae tubo 7 mm. longo; bracteolis hyalino-membranaceis obscure parceque puberulis truncatis 7 mm. longis; calyce obtuse trilobato circa 22 mm. longo; corolla intense flava 3 cm. longa; staminis filamento petaloideo elliptico apice integro; ovario triloculari.—Peru: Yurimaguas, Dept. Loreto, *Williams 3985* (type, Field Museum); also *3924*; *Killip & Smith 28000*.

A very strange plant with something of the aspect of *Zingiber* in the narrow light-colored leaves and orange-reddish bracts; and with partially the character of *Renealmia*, but the connective is certainly petaloid and the inflorescence is typically that of *Costus*. The ovary is definitely 3-celled. I have not succeeded in dissecting well a perfect corolla.

Costus scaber R. & P. Fl. Peruv. 1: 2. pl. 3. 1798.

Klug 922, referred recently to *C. villosissimus* Jacq., is rather this species.

Costus puchucupango, spec. nov., vix robustus ut videtur mediocriter altus, caulibus circa 1–1.5 cm. crassis; vaginis sordide fulvo-puberulis marginibus dense longe lanuginoso-ciliatis; foliis sessilibus oblongo-obovato-subellipticis, circa 2–2.5 dm. longis, 8–10 cm. latis, basi angustatis, apice caudato-acuminatis, supra glabris praeter costam mediam utrinque marginesque prominulos fulvo-pubescentes, subtus ubique minutissime parceque pallide puberulis; inflorescentia turbinato-ovoidea; bracteis late ovatis apice rotundato-acutis circa 1.5 cm. longis ut videtur rubricundis infra apicem prominente calloso-lineatis.—Peru: Yurimaguas, Dept. Loreto, *Williams 4570* (type, Field Museum).

The habit and foliage, even to color, of this plant are strikingly like those of *C. laevis* R. & P. The latter, however, is glabrous, and so marked are the two forms of pubescence on *C. puchucupango* that it seems reasonable to think it is more than a pubescent variety. Too, its inflorescence is very young, and more than likely there are distinctive floral characters. It bears some resemblance to *C. Ulei* Loes., but that species has much narrower bracts, as also *C. tarmicus*

Loes., the latter with glabrous leaves. The native name may serve also as the specific one.

Costus tarapotensis, spec. nov., *C. amazonico* ut videtur similis, foliis membranaceis supra glabris subtus conspicue fulvo-villosis; oblongo-ovato-lanceolatis, basi apiceque sensim angustatis, acuminatis, circa 3 dm. longis, 5–7 cm. latis; inflorescentia turbinato-ovoidea glabra; bracteis circa 5 cm. longis et 7 mm. latis acutis ad apicem submembranaceis; floribus ut videtur 2 cm. longis.—Peru: Tarapoto, Dept. San Martín, *Williams* 6529 (type, Field Museum).

In spite of the imperfect material, I think the alliance of this plant must be with *C. amazonicus* (Loes.) Macbr., which has much broader leaves.

Dimerocostus Williamsi, spec. nov., ut videtur affinis *D. Tessmannii* sed foliis solum 10–12 cm. longis, circa 3.5 cm. latis, bracteis definite dentatis et cum calloso obscure ornatis, sepalis 2 cm. longis et seminibus brunneis 4 mm. longis; vaginis ad marginem conspicue lanuginoso-ciliatis; petiolis brevissimis circa 2 mm. latis.—Peru: Yurimaguas, Dept. Loreto, *Williams* 4291 (type, Field Museum).

The foliage of this plant is nearly that of the little-known *D. Guttierrezii* Ktze., but the pubescent sheaths, narrow petioles, and brown instead of black seeds would seem to distinguish it. Except in their much smaller size, the leaves resemble those of *D. Tessmannii*, but as the inflorescence is in fruit (detached, however), it does not seem likely that the leaves are not fully grown. Besides, there appear to be other differences, as indicated. *D. bolivianus* (Rusby) Loes. is apparently related, having also the bicarinate bracteoles of all these species, but they are described as ciliate, which is not at all the case for *D. Williamsi*. To be considered is *D. elongatus* Huber, but it has deeply fissured bracteoles and puberulent leaves. It seems, therefore, necessary to admit another species into this rapidly growing genus and it, the fifth for Peru, may fitly bear the name of the energetic collector.

Renalmia lativagina, spec. nov., robusta circa 3 m. alta; foliis longe petiolatis oblongo-ellipticis abrupte et breviter caudato-acuminatis, basi sensim gradatim angustato-cuneatis, circa 8 dm. longis fere 2 dm. latis, glabris vel fere glabris; pedunculis basalibus dense cum vaginis glabris chartaceo-coriaceis imbricatis 1–1.5 dm. longis circa 2.5 cm. latis, utrinque vestitis; racemis simplicibus 3 dm. longis; floribus solitariis; rhachidibus dense sed haud velutine pubescentibus; bracteis calycibusque leviter puberulis 3-dentatis circa 2.5 cm. longis; pedicellis 7 mm. longis; corollis fere 3 cm. longis, lobis et labello ut videtur subaequalibus.—Peru: Iquitos, Dept. Loreto, *Killip & Smith* 27099 (type, Field Museum).

Undoubtedly referable to the *Racemosae*, but not to any species as yet described therein. So large are the sheaths, considered proportionately to the rest of the plant and to those of the other species, that they could not inaccurately be described as enormous. The pubescence of the inflorescence is a dense but not velvety puberulence. The bracts, except young ones about the buds, are too broken for description; the buds are oblong-obovate, acute, 2.5 cm. long, and 1 cm. wide.

At the New York Botanical Garden this was considered the same as *R. thyrsoides* (R. & P.) P. & E., with spike dense even in fruit and rarely 1.5 dm. long, the pedicels 2 mm. long, and the sheaths soft, elliptic, and only 3–5 cm. long.

Calathea Loeseneri, spec. nov., ut videtur circa 3 dm. alta; petiolis circa 13 cm. longis ad medium vaginatis cum vaginis membranaceis minute parceque pubescentibus; foliis valde inaequilateris ovato-ellipticis basi acutis apice anguste acuminatis fere 1.5 dm. longis, 5.5 cm. latis, supra glabris, subtus minutissime strigillosis praecipue ad nervos; pedunculis circa 3 dm. longis minute adpresseque pilosis vel superne plus minusve longe villosis; spicis subturbinatis vel anguste ovoideis circa 7 cm. longis et 2–2.5 cm. latis; bracteis inferioribus subcoriaceis solum puberulis vel interdum etiam praecipue ad basin villosis, 2–2.5 cm. longis, apice rotundatis, superioribus (sterilibus) erectis anguste ovato-lanceolatis acutis vel acuminatis 4–5 cm. longis; bracteolis indurato-claviculatis; floribus ignotis; capsula glabra circa 7 mm. longa.—Peru: Marsh, Mishuyacu, near Iquitos, Dept. Loreto, *Klug 940* (type, Field Museum).

No other species referred to the *Comosae* with indurate bracteoles has the small, sharply acuminate leaves of this plant. Nevertheless it has recently been determined as *C. peruviana* Koern., a species with much larger leaves, little oblique at the rounded-apiculate tip, and with soft bracts, rusty-pilose throughout. Perhaps the species is highly variable in these respects, but I can not believe it. The collector noted the flowers as lilac-color.

Calathea peruviana Koern. Bull. Soc. Nat. Mosc. 35¹: 128. 1862.

Besides the Pavón specimen from Chicoplaya, I have seen *Weberbauer 1817* from La Merced (det. Loesener) and *Killip & Smith 23664* from Río Pinedo, north of La Merced. The last was determined as *C. velutina* (P. & E.) Koern., a species belonging in another group because of its thin bracteoles.

That the woods of Peru are filled with unclassified plants may be accepted as a truism after a glance at nearly any revision or

current taxonomic paper. Nevertheless, the numerous species I am proposing here, particularly in *Calathea* and *Ischnosiphon*, are, I am certain, mostly not new in the sense of new species acceptable by me in the flora of Idaho, for instance, although some of them are undescribed entities positively distinct from any known form. All of them, however, key out from all other Peruvian species, at least as interpreted by me, and accordingly I propose them as new because in working on a partially known flora it is the most practical device in building up its classification. To treat these different plants as varieties or to include them in previously described species by liberalization of original descriptions only, in most instances would make more difficult the monographer's work in unraveling the true relationships and determining the real specific lines.

Calathea silvosa, spec. nov., planta gracilis ad 6 dm. alta; foliis subtus, petiolis pedunculis inflorescentiisque conspicue sed vix dense cum pilis brunneis longissimis patentibus pubescentibus; petiolis solum inferne vaginatis circa 6 dm. longis; foliis supra glabris nitidis ut videtur utrinque viridibus, fere aequilateris et ellipticis, ad basin paullo angustatis, subacutis, apice subrotundatis et abrupte apiculato-acuminatis, circa 3 dm. longis, 1.5 dm. latis; pedunculis ut videtur elongatis; spicis subglobosis circa 6 cm. crassis; bracteis membranaceis valde depresso-patentibus ovato-lanceolatis, exterioribus ad basin coriaceis, glabris, acuminatis, circa 5 cm. longis, 12 mm. latis, interioribus vacuis late ovatis acutis circa 2–2.5 cm. longis, 1.5–1.7 cm. latis; sepalis glabris 17 mm. longis; corollae tubo 2.8 cm. longo, lobis oblongo-lanceolatis subacutis 10 mm. longis; staminodio obovato, circa 11 mm. longo, calloso paullo brevior ceteris simili; ovario glabro.—Peru: Woods, Mishuyacu, near Iquitos, Dept. Loreto, *Klug 11* (type, Field Museum).

A member of the series *Comosae*, but very distinct in pubescence. The long brown hairs, though uniformly distributed and conspicuous, do not conceal the surfaces. The flowers were noted by the collector as green and brown. The widely spreading, not at all imbricated, and subequal bracts give the inflorescence a striking appearance.

Calathea ulotricha, spec. nov., caulibus petiolis pedunculisque ignotis; foliis mediocriter inaequilateris late ellipticis ad basin rotundatis basi ipse acutis ad apicem abrupte longiacuminatis vel fere caudato-acuminatis 4 dm. longis et fere 2 dm. latis supra glabris nitidulis subtus minute denseque adpresse pilosis ubique viridibus; spicis cylindraceis 8 cm. longis 3 cm. latis vel cum floribus 5 cm. latis pallidis et dense cum pilis ochroleucis longissimis (ad 2 mm.) et brevissimis intermixtis molliter pubescentibus (sterilibus minus dense indutis); bracteis spiraliter dispositis, inferioribus subrhomboideo-ovatis rotundo-truncatis 2 cm. longis 1 cm. latis, superioribus steri-

libus ovato-lanceolatis obtusis sed ad apicem aliquid angustatis circa 5 mm. latis; bracteolis indurato-claviculatis fere 2 cm. longis; sepalis 10 mm. longis; floribus 2.5 cm. longis conspicue exsertis; corollae tubo glabro 18 mm. longo, lobis lanceolatis acuminatis 7 mm. longis; staminodium exterius 9 mm. longum obovatum obscure emarginatum.—Peru: Santa Rosa, Dept. Loreto, Lower Río Huallaga, *Williams 4921* (type, Field Museum).

In all probability a handsome plant, tall, with large leaves, and entirely at variance to all other species of the series *Comosae*. In its rather narrow, densely pale-pubescent inflorescence, indurate bracteoles, and acuminate leaves it possesses an unusual combination of characters.

Calathea jocosa, spec. nov., caulibus petiolis pedunculisque ignotis; foliis ubique viridibus supra glabris nitidulis subtus tenuissime denseque puberulis inaequilateris late vel rotundo-ellipticis basi rotundato-acutis apice rotundatis et brevissime acutis, 23 cm. longis, 15 cm. latis; spicis globosis circa 7 mm. crassis; bracteis glabris laxae imbricatis et valde divaricatis, exterioribus fere 5 cm. longis solum ad basin subcoriaceis oblongo-obovatis breviter acutis, sterilibus numerosis patentibus similibus paullo brevioribus; bracteolis membranaceis; floribus ignotis; ovario glabro.—Peru: Recreo, near Yurimaguas, Dept. Loreto, *Williams 3968* (type, Field Museum).

Meager as the material is, it seems that the plant must belong to the *Comosae*, although its glabrous inflorescence and subrotund leaves, pubescent beneath, comprise a character not found in any other species in that group. Possibly it is a member of the *Nudiscapae*, but there, even on its few known characters, it fits the description of no other species. Among Peruvian *Calatheas* it resembles most *C. silvosa*.

Calathea enclitica, spec. nov., gracilis vix alta glabra; foliis fere aequilateris elliptico-ovatis basi subacutis vel subrotundatis apice obtusis vel subacutis circa 1.5 dm. longis, 6.5–7 cm. latis, ut videtur pallide viridibus et concoloribus; pedunculis ut videtur 1.5 dm. longis; spicis turbinato-globosis cum bracteis 5–6 cm. longis; bracteis exterioribus coriaceo-chartaceis ovato-lanceolatis acutis vel acuminatis ad 4 cm. longis, interioribus valde patentibus membranaceis acutis circa 3 cm. longis, 10–12 cm. latis; bracteolis membranaceis; sepalis 12 mm. longis; corollae tubo ignoto, lobis circa 10 mm. longis; staminodium exterius obovatum 17 mm. longum, callosum ut videtur circa 12 mm. longum; ovario glabro.—Peru: Pebas, on the Amazon River, Dept. Loreto, *Williams 1955* (type, Field Museum).

More than likely this is a close ally of *C. colorata* (Hook.) Benth., notwithstanding the abundant technical differences. Its divaricate, not at all imbricate bracts seem to be a very similar development.

Its small leaves are noteworthy. It is unfortunate that only a portion of the petiole and peduncle is known.

Calathea Williamsi, spec. nov., ut videtur gracilis et humilis; petiolis longissime vaginatis 5–6 cm. longis; vaginis paullo angustatis fere 4 mm. latis dense strigosis; foliis plus minusve inaequilateris fere ellipticis basi subrotundatis apice definite acuminatis circa 1.5 dm. longis, 6–7 cm. latis, supra ut videtur viridibus sed molliter cum pilis rufis subpatentibus pubescentibus, subtus atropurpureis (vel rubris?) etiam dense subpatente albo-pilosis; pedunculis strigosis, recurvatis e centro foliorum, 3 cm. longis; spicis anguste cylindraceis 5 cm. longis, circa 1 cm. latis, rufo-villosis; bracteis distichis ad apicem fertilibus obovatis circa 1.5 cm. longis, 8 mm. latis vel infimis longioribus; bracteolis indurato-claviculatis; sepalis glabris, 8 mm. longis; corollae tubo glabro, 12 mm. longo, staminodium exterius circa 6 mm. longum; ovario glabro.—Peru: La Victoria on the Amazon River, Dept. Loreto, *Williams 2541* (type, Field Museum).

At first glance this species suggests *C. Legrelleana* (Lind.) Reg., but its spikes are evidently floriferous to the apex. I think, nevertheless, that its relationship is with that species, which probably belongs in the *Comosae*. The character of spiraled or distichous bracts is not always well marked.

Calathea Standleyi, spec. nov., ut videtur altissima et robusta; petiolis elongatis ad 10 dm. longis dense rufo-villoso-hirsutis exceptis 2 cm. ad apicem; foliis late ellipticis circa 4 dm. longis, 2 dm. latis, acuminatis ad basin rotundatis et breviter decurrentibus glabris utrinque metalico-caeruleis-coloratis; pedunculis circa 1.5 dm. longis ad medium vaginantibus; vaginis hirsuto-villosis fere 1 dm. longis et 1 dm. anguste productis; spicis ovoideis, circa 1 dm. longis, 5–6 cm. crassis, glabris ut videtur metalico-caeruleis; bracteis exterioribus late ovatis 4.5–5 cm. longis, 3–3.5 cm. latis vix acutis, interioribus fere acuminatis; bracteolis membranaceis; floribus paullo exsertis pallide flavis circa 4 cm. longis, glabris; calyce glabro 17–20 mm. longo; corollae tubo circa 3 cm. longo; staminodiis ut videtur subaequalibus circa 5 mm. latis, 8 mm. longis.—Peru: Puerto Yessup, Dept. Junín, *Killip & Smith 26263* (type, Field Museum).

This beautiful *Calathea* is surely comparable to *C. pachystachya* (P. & E.) Koern., of the *Scapifoliae*, a glabrous plant with elongate spikes but otherwise not, apparently, very diverse. In the single inflorescence I have not succeeded in removing a perfect flower. *C. contamanensis* Huber, though placed by the author in the *Nudiscapae*, seems from description to resemble our plant. Its leaves, however, are described as dark violet beneath and its bracts as only 1.5 cm. long.

Calathea mishuyacu, spec. nov., *C. exscapae* peraffinis; ubique fere glabra; petiolis longissime vaginatis saepe fere ad articulum,

vaginis membranaceis inferne 5 mm. latis; foliis haud manifeste inaequilateris obovato-ellipticis ad basin gradatim attenuatis, apice subabrupte et breviter acuminatis, ad 10.5 cm. latis, 1.5 dm. longis, ut videtur obscure zonatis; floribus fere ignotis, pallide flavis, ut videtur vix exsertis; bracteis coriaceis; sepalis circa 12 mm. longis; ovario apice paullo sericeo.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 416* (type, Field Museum).

Probably this species is much more distinct from *C. exscapa* (P. & E.) Koern. than I have realized. The material is not in good condition, the one flower remaining being broken. *Williams 7868* from Yurimaguas I have referred to *C. exscapa*, and it seems quite different in foliage and in texture of bracts, the latter being much softer than in our plant. The petioles of *C. exscapa* are figured by Poeppig and Endlicher as vaginate only at base. Unfortunately the material seen by me shows only the upper part of the petioles. A plant may bear a native name without modification. So, the Indian word "mishuyacu" may serve as the scientific name of this species.

Calathea Klugii, spec. nov., glabra humilis vix ultra 2 dm. alta, vulgo humilior radicibus rhizomatosi; petiolis longissime vaginatis, vaginis sensim attenuatis, 4–10 cm. longis; foliis anguste ovato-vel oblongo-lanceolatis aequilateris basi rotundatis apicem versus sensim acute acuminatis ad 12 cm. longis et 2 cm. latis interdum brevioribus et 1.5 cm. latis, utrinque viridibus vel ut videtur subtus plus minusve purpureis; spicis subtruncatis cum floribus circa 2 cm. longis et vix 1 cm. latis; bracteis paucis oblongo-ovatis subacutis glabris vel minutissime parceque puberulis, exterioribus circa 7 mm. longis, 4 mm. latis; sepalis glabris fere 9 mm. longis; floribus glabris albis et violaceis; corollae tubo 10 mm. longo, lobis lanceolatis vix 4 mm. longis, staminodio paullo longiore.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 532* (type, Field Museum); also 559.

Certainly a member of the series *Rhizanthae*, but differing from all species with soft bracteoles in its narrow leaves, glabrous (or nearly) bracts, and small flowers. The peduncles may arise directly from the leaf base, apparently, and such individuals suggest the subgenus *Microcephalum*, which contains no species with so narrow leaves at the same time acuminate and equilateral.

Ischnosiphon Killipii, spec. nov., suffrutescens, scandens; caulibus ut videtur ramosissimis e nodis incrassatis; vaginis glabris circa 6 cm. longis; petiolis ad 7–7.5 cm. longis, articulo 3–6 mm. longo supra paullo hirsuto; foliis fere ellipticis basi rotundatis apice valde inaequilateri-acuminatis viridibus haud pallidioribus subtus glabris vel costa media et apice strigosa, plerumque ad 12 cm. longis et 5 cm. latis; spicis 12 cm. longis, 6 mm. crassis; bracteis glabris

circa 3.5 cm. longis; bracteolis induratis fere 3.5 cm. longis; floribus intense flavis geminatis; sepalis paullo puberulis 2 cm. longis; corollae tubo fere 4 cm. longo glabro, lobis anguste lanceolatis 12 mm. longis breviter pilosis, staminodio circa 1 cm. longo; ovario parce piloso.—Peru: Iquitos, Dept. Loreto, *Killip & Smith 26929* (type, Field Museum).

Apparently in habit allied to *I. gracilis* (Rudge) Koern., with different foliage (in color, shape, and size) and narrower spikes. In other respects it seems much nearer *I. surinamensis* (Miq.) Koern. and its apparent relatives, but its crowded leaves with exceptionally 1-sided tips afford a character, if important, as accepted by Schumann, that forbids its reference to any of these species.

Notwithstanding these affinities the same collection has recently been determined as *I. bambusaceus* (P. & E.) Koern., a plant with narrowly ovate-lanceolate (2–2.5 cm. wide), long-acuminate leaves, the tips not at all oblique. Of course, there is the question of specific values, but with only the two sheets before me and no intermediates, I can not consider them even varietally related.

Ischnosiphon verruculosus, spec. nov., scandens ad nodos tumescens; caulibus vaginisque verruculoso-tuberculatis; petiolis ad articulum vaginatis (articulus 1–2 cm. longus) scabris, vaginis valde productis; foliis utrinque viridibus glabris (vel apice puberulis) ovato-ellipticis basi rotundatis ad apicem definite inaequilateralibus acuminatis circa 1 dm. latis et fere 2 dm. longis; racemis solitariis vel geminatis ad 3 dm. longis circa 7 mm. crassis; bracteis minutissime puberulentis plerumque 3–3.5 cm. longis; bracteolis apice induratis 4 cm. longis conspicue exsertis; floribus flavis, rubris et violaceis circa 2.5 cm. exsertis; sepalis leviter pilosis lineari-acuminatis 3 cm. longis; ovario piloso; corollae tubo 2 cm. longo parce puberulo, lobis anguste lanceolatis distincte pilosis; staminodio circa 7 mm. longo.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 430* (type, Field Museum).

The exceedingly rough upper internodes and sheaths recall *I. gracilis* var. *scabra* Peters, but this is a much coarser plant with larger and green leaves. It differs also from *I. gracilis* (Rudge) Koern. in its pilose ovary and small staminodium. Apparently the rough stems are distinctive in comparison with all species except *I. gracilis*; nevertheless its true relationship is with *I. aruma* (Aubl.) Koern., a large-leaved plant, with several racemes of larger flowers, to which species it has recently been referred but in which it could most doubtfully be included as a variety.

Ischnosiphon obliquiformis Loes. Notizbl. 6: 272. 1915.

This species, to which I had referred *Klug 1006*, may be considered by some as identical with *I. obliqua* (Rudge) Koern., since I find

the collection has recently been determined as the latter. However, Professor Loesener's judgment, in the absence of intermediate material, may be followed, and the material mentioned properly represents his species.

Ischnosiphon ornatus, spec. nov., *I. sphenophyllo* similis; vaginis pedunculis bracteisque fulvo-pilosis; petiolis ad 1.5 dm. longis (articulus 1.2 cm. longus) infra medium vaginatis supra glabris vel puberulis; foliis aequilateris (acumine haud excentrico) oblongo-ellipticis basi cuneatis circa 6 cm. latis, 1.5–2 dm. longis, praeter costam mediam apicemque glabris, subtus pruinosis; spicis ad 17 cm. longis circa 6 mm. crassis; bracteis 2–2.3 cm. longis; bracteolis induratis solum 17 mm. longis; sepalis linearibus pilosis 15 mm. longis; corollae tubo puberulo 18 mm. longo, lobis linearilanceolatis 6 mm. longis; staminodio circa 5 mm. longo; ovario apice sericeo.—Peru: Yurimaguas, Dept. Loreto, *Williams 3870* (type, Field Museum).

Very possibly only a variety of *I. sphenophyllus* Schum., but spikes almost shaggy-pubescent and sheaths far from "glabrous." Besides, the bracteoles are much shorter, the corolla tube minutely pubescent, and the corolla lobes shorter and linear. *I. hirsutus* Peters, which I have not seen, seems to differ in its villous petioles and much larger leaves. Its flowers are unknown.

Ischnosiphon neotericus, spec. nov., glaberrimus ut videtur altus, erectus; petiolis solum inferne vaginatis ad 2.5 dm. longis, articulo 2 cm. longo; foliis membranaceis utrinque viridibus ellipticis aequilateris basi rotundatis apice fere abrupte caudato-acuminatis, acumine 2 cm. longo tenuissime producto; spicis solitariis circa 12 cm. longis 4 mm. crassis; bracteis valde convolutis 3 cm. longis glabris apice minute dentatis; bracteolis clavato-induratis 3.3 cm. longis; sepalis linearibus minutissime puberulis 18 mm. longis; floribus geminatis ut videtur roseis; corollae tubo 3.5 cm. longo glabro, lobis glabris linearilanceolatis 9 mm. longis; staminodio crispe crenulato 11 mm. longo; ovario glabro.—Peru: Iquitos, Dept. Loreto, *Williams 3761* (type, Field Museum).

Perhaps as near *I. surinamensis* (Miq.) Koern. as any species, but at once distinct by its paired flowers and long petioles. The plant seems to me to be entirely at variance to any described form.

Ischnosiphon wyomingensis, spec. nov., scandens, praeter inflorescentiam haud pubescens; vaginis 4–5 cm. longis; petiolis 1–1.5 cm. longis; foliis oblongo-ellipticis vel fere ellipticis basi rotundatis apice sensim mediocriter oblique acuminatis, acumine ipso subcaudato, 5–6 cm. latis et circa 1.5 dm. longis, supra fuscolivaceis, subtus paullo pallidioribus; racemis ut videtur solitariis circa 2 dm. longis, 7 mm. crassis haud flexuosis; bracteis circa 3.5 cm. longis minute adpresseque sed definite puberulis; bracteolis

filiformibus apice induratis paullo vel vix exsertis; sepalis 3 cm. longis manifeste adpresse pilosis; corollae tubo conspicue villosa circa 3 cm. longo, lobis anguste lanceolatis 1 cm. longis; staminodio oblongo-lanceolato.—Peru: Mishuyacu, Dept. Loreto, *Klug 854* (type, Field Museum).

This could very easily be included in *I. surumuensis* Loes., but the bracts are closely puberulent, the corolla tube conspicuously pubescent, and the staminodium much narrower. *I. Uleanus* Loes. is similar, but it has larger leaves and slender flexuous spikes. The flowers were described by the careful collector as yellow and brown. The colors of Wyoming appear to have been planted in Peru. It gives me pleasure to give them botanical recognition there!

Monotagma anathronum, spec. nov., ut videtur peraffinis *M. doloso* sed petiolis longissime vaginatis (ad vel fere ad articulum), foliis 8–12 cm. latis et 2 dm. longis et paniculis haud spiciformibus; bracteis 2.5– fere 3 cm. longis superne pilosis; sepalis 1 cm. longis; corollae tubo glabro fere 2.5 cm. longo, lobis ellipticis circa 3 mm. longis; ovario glabro.—Peru: San Antonio, Río Itaya, Dept. Loreto, *Killip & Smith 29363* (type, Field Museum). Alto Río Itaya, *Williams 3251*.

Allied also to *M. spicatum* (Aubl.) Macbr. in the complete lack of annulus at the base of the callus, but the inflorescence accompanied by a leaf. It is therefore comparable also to *M. Ulei* Schum., to which Gleason refers it, but that species has densely villous spikes only a few centimeters long and a pubescent corolla tube only 1 cm. long.

Monotagma contrariosum, spec. nov., herba ut videtur humilis; petiolis late et fere ad articulum vaginatis circa 2 dm. longis, articulo fere 2 cm. longo supra brevissime piloso, annulo (a petiolo) prominente denseque hispido; foliis conspicue inaequilateris basi rotundatis, basi ipsa acuta breviter acuminatis, acumine valde excentrico, fere 2 dm. longis, 1 dm. latis, subtus cum vaginis pedunculis bracteisque pilosis, supra praeter costam glabris, ut videtur zonatis; paniculis angustis circa 12 cm. longis, rhachidibus conspicuis; bracteis circa 2 cm. longis; sepalis 1 cm. longis, hyalinis, glabris; corollae lobis valde cucullatis 5 mm. longis; ovario apice villosa.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 116* (type, Field Museum).

This species would key only to *M. plurispicatum* (Koern.) Schum., because of the conspicuously annulate-barbed calloused petioles, but in its few-flowered pilose inflorescence it is markedly contrarious.

Monotagma dolosum, spec. nov., gracilis; caulibus superne petiolis foliisque subtus minute pilosis; petiolis circa medio vaginatis ad 18 cm. longis infra laminam crasse (5 mm.) callosis; foliis haud

vel vix inaequilateris ovato-ellipticis ad basin acutis ad apicem acuminatis, 6–7 cm. latis, plerumque 15–18 cm. longis, supra praeter costam dense et longe pilosam glabris; paniculis spiciformibus ut videtur axillaribus breviter pedunculatis paucis circa 1 dm. longis fere glabris; rhachidibus internodiis conspicuis; bracteis valde inovatis circa 17 mm. longis; floribus ut videtur albis solitariis sessilibus; sepalis 10 mm. longis; corollae tubo circa 12 mm. longo, glabro, lobis oblongo-ellipticis circa 2.5 mm. longis; staminodio (?) fere 5 mm. lato profunde emarginato.—Peru: Near Yurimaguas, Dept. Loreto, *Williams* 5025 (type, Field Museum); also 5115.

Simulating *M. parvulum* Loes., but in reality nearest, I think, to *M. anathronum*, from which it is distinguished chiefly by its nearly evaginate petioles and spikelike inflorescence.

Monotagma laxum (P. & E.) Schum., var. **oblongifolium**, var. nov., foliis oblongis 5.5 cm. latis, ad 3 dm. longis, ad apicem paullo obliquis; vaginis (semper?) ad basin dense longo-pilosis; sepalis circa 17 mm. longis.—Peru: Between Río Nanay and Río Napo, Dept. Loreto, *Williams* 721 (type, Field Museum).

A plant apparently worthy a name, but there are connecting states.

Myrosma stromanthoides, spec. nov., caulibus petiolisque ignotis; foliis glabris late ellipticis basi cuneato-rotundatis apice breviter acuminatis subtus pallide viridibus supra ut videtur plus minusve purpureo-zonatis circa 7 dm. longis, 1.5–1.8 dm. latis; racemis plerumque 2–3; pedunculis laxe villosis, 1.5–5 cm. longis, longe bracteatis; bracteis inflorescentiarum circa 8–12 vix laxe imbricatis scarioso-chartaceis circa 1.5 cm. longis subrotundatis persistentibus; floribus 7–8 geminatis, pedicellis brevibus vel longioribus vix 2 mm. longis; sepalis 7 mm. longis; ovario glabro; capsula laevi 5 mm. longa.—Peru: Tarapoto, Dept. San Martín, *Williams* 6563 (type, Field Museum); also 6017. “Bijahuillo.”

Pubescent Colombian forms of **Myrosma lutea** (Jacq.), comb. nov. (*Maranta lutea* Jacq.) are, from herbarium material, scarcely distinguishable in aspect from our plant. Typically, however, *M. lutea* is glabrous and the bracts finally caducous, and always, apparently, the flowers are two or few, the terminal with a pedicel 3 mm. long. It is unfortunate that the attachment of the leaves of our plant is unknown.

This plant calls to attention the similarity of *Stromanthe* Loud. Hamb. Gartenz. 5: 225. 1899, and *Myrosma* L.f. Schumann relied upon the diverse placement of the leaves (in the former antitropous, in the latter homotropous) to separate them. If this is properly a generic character, *Maranta Ruiziana* must be removed from *Maranta*, for its leaves are antitropous. If the character were supported by others it might seem to have significance, but in this case it is

not. On other characters there is no case for *Stromanthe*. The staminodium is equally developed and the bracts may persist in fruit in *S. lutea*, as evidenced above. Whether *Myrosma* should also include *Saranthe* Eichl. and *Ctenanthe* Eichl. is open to question, but probably at least the latter should be reduced.

For that matter, all generic lines in the Marantaceae, as drawn by Schumann, are certainly open to question. There is no evidence that many characters used by him to separate the groups result in natural divisions or in divisions that, practically in some instances at least, were not better regarded as sections of a well-defined genus. In the *Maranteae*, for example, there is a general segregation that is in logical accord with the generic acceptances in the *Phrynieceae*, but why should one regard characters as of generic value in one instance and not in another, especially when they result in the disassociation of plants of apparent group affinity? That is, if the arrangement of the bracts is of importance as a generic character, why is it given prime recognition in one place and none at all in another? If the number of flowers is significant here, why not generically elsewhere? Or again, if the duration of the bracts is fundamentally important sometimes, why not always? Or the degree development (to absence) of staminodia? Obviously one should be able to answer these queries by pointing out that the characters mentioned in each instance are supported by others that, taken together, indicate natural groupings. Unfortunately such is not the true state of affairs. Even a casual consideration of the plants themselves suggests that in this family, as in many others, the lines of development have been so close that the only practical and reasonable treatment will be based not primarily on logic and arithmetic (as Schumann's so obviously is), but on *all characters as found* plus common sense. The result will be a classification less erudite in appearance, no doubt, but basically sound in so far as variable and perplexing nature permits. Discarding the commutation method, then, the *Maranteae* could conveniently include probably six instead of ten genera, namely, *Maranta*, *Myrosma*, *Ischnosiphon*, *Monotagma*, *Thalia* (of course excluding the section *Ammothalia* illogically maintained here by Schumann in defiance of his own generic key), and perhaps *Monophyllanthus*. A similarly elucidating realignment could readily be made for the *Phrynieceae*.

3. OTHER PLANTS, CHIEFLY MORACEAE

Killip & Smith 27932 has been referred by Professor Mildbraed to *Pourouma sapida* Karst. but by the collectors to *P. cecropiaefolia*

Mart. I think this is one instance of misdetermination more apparent than real, for the validity of the Karsten species may well be questioned.

Cecropia Standleyi, spec. nov., arbor 3–6 m. alta; ramulis petiolisque plus minusve hispidulis haud lanuginosis; petiolis 1–2 dm. longis sulcato-striatis, basi intense rufo-tomentoso-callosis interdum etiam hispidulis; foliis subrotundatis ut videtur plerumque circa 3.5 dm. latis, supra viridibus ubique cum pilis nitidis submolliibus haud asperis mediocriter pubescentibus, chartaceo-membranaceis nunquam bulboso-rugosis, subtus in areolis griseo- sed haud lanuginotomentosis, costis venulisque plus minusve hirsutulis; foliis ad paullo infra medium 6–7-lobis, lobis sinu rotundato sejunctis late obovatis breviter acuminatis, superioribus multo majoribus, lobo medio 2–2.5 dm. longo, 10–12 cm. lato, nervis (in lobo medio) utrinque 12–15, 1–1.5 cm. distantibus; pedunculis breviter denseque hirsutulis circa 1–1.5 dm. longis; amentis masc. circa 8–10, 1 cm. longe pedicellatis, 9 cm. longis, circa 3 mm. latis, filamentis aequalibus, antheris non caudatis; amentis fem. 4 subsessilibus circa 18 cm. longis, 1 cm. crassis, perigonio leviter tomentoso fere 2 mm. longo, stigmatibus minute penicillatis.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 399* (type, Field Museum); also *Killip & Smith 27033* (fem.).

Among the twenty-five species of *Cecropia* known to grow in Peru are several that resemble this one in a general way, but none precisely, and in distinguishing *Cecropias* precision is necessary. Nearest among these several appears *C. ficifolia* Warb., with obtuse or barely acute leaf lobes, asperous above and white-tomentose beneath. Perhaps as nearly allied is *C. Klotzschyana* Miq., with distinctly rugose-bullate leaves, white beneath in the areoles with a felt-like pubescence and with fewer aments. Then there is *C. bicolor* Kl., but its leaf lobes are oblong; and the obscure *C. dentata* Tréc., its leaves described as 9-lobed, the lobes “dentate-sub serrate,” and white-tomentose beneath. Among extra-Peruvian species, *C. palmata* Willd. and *C. adenopus* Mart. only need be mentioned. The former differs in its tomentose pubescence and the latter in its thick aments. In the case of all these species I have indicated only the most obvious differences.

Pseudolmedia Mildbraedii, spec. nov., arbor 15 m. alta; ramis ramulisque brevibus griseo-brunneis glabris vel minutissime sparseque puberulentis, juvenilibus plus minusve angulatis; petiolis crassis 3 mm. longis; foliis numerosis elliptico-ovatis plerumque 8 vel 9 cm. longis et 4 vel 4.5 cm. latis, basi haud oblique sed breviter cuneato-acutis, apice plus minusve obscure obtuseque caudato-acuminatis vel interdum apicem versus solum angustatis et obtusis, glabris, coriaceis, supra ut videtur intense viridibus, tenuissime denseque reticulato-

venosis, nervis lateralibus circa 15 mediocriter undique prominulis brunneo-flavidis, venis subtus obscure reticulatis; receptaculis masc. discoideis 6 mm. latis; bracteis valde imbricatis circa 3-seriatis, sparse puberulis, marginibus tenuioribus sed vix vel paullo ciliatis, exterioribus late rotundatis interdum fere latioribus quam longis, circa 2 mm. latis, interioribus similibus sed 4 mm. latis et longis vel marginalibus (2-4) lanceolatis et 5 mm. longis; bracteolis lineari-spathulatis apicem versus tenuiter ciliatis circa 4 mm. longis; filamentis vix 0.5 mm. longis; antheris 1.5 vel 2 mm. longis, connectivo producto apiculatis et minutissime ciliatis.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 633* (type, Field Museum).

P. laevigata Tréc. has, according to description, thinner and smaller, oblong-lanceolate leaves, somewhat oblique at base, the 15-18 lateral nerves rather obscure, and scarious-ciliate-fimbriate-margined receptacle bracts. Otherwise *P. Mildbraedii* appears to be similar. The collector noted the flowers as "light yellow." They, i.e. the receptacles, are star-like, the narrow and elongate innermost bracts extending as points.

Professor Mildbraed should have many plants named for him in recognition of his friendly helpfulness in the furtherance of their study.

Pseudolmedia scabra, spec. nov., arbor 4 m. alta; ramulis foliisque undique dense scabro-puberulis; petiolis 5-7 mm. longis; foliis oblongo-ellipticis basi acutis paullo vel haud inaequilateris apice fere obtusis vel obtusis et apiculatis, plerumque 8 cm. longis et 3 cm. latis vel demum 11 cm. longis et 4.5 cm. latis, rigidiuscule coriaceis, supra viridibus, subtus pallidioribus; nervis lateralibus circa 9 cum veniis reticulatis, supra vix prominulis, subtus conspicuis; receptaculis masc. 2-3 in axillis foliorum fasciculatis, pedunculis 5-7 mm. longis tomentuloso-puberulis, globosis circa 5 mm. crassis; bracteolis spathulatis paullo apice incrassatis circa 1 mm. longis; filamentis tenuibus 1.5 mm. longis; antheris fere 1 mm. longis.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 384* (type, Field Museum).

To my surprise, upon dissection I found this *Perebea*-like tree must be referred to *Pseudolmedia*, for certainly there is no perianth as such, although two or three stamens may be borne together separated by as many bractlets from the nearest stamen or stamens. No other *Pseudolmedia* has the fine dense scabrosity of this species, nor has "*Brosimum Uleanum* Mildbr." to which it has recently been referred. But compare also *Perebea elegans*!

Admittedly, something is wrong in the classification of the *Moraceae*. Collections made since the days of Trécul, Bentham and Hooker, and Engler have presented many new problems that are not solved

satisfactorily by interpolation into the work of these earlier botanists, the method followed by Pittier and Ducke. As a result, we have a flock of small groups designated as genera that are purely academic, based on differences in one sex only, and, ignoring similarities, that result in the most similar of trees being separated generically, to no practical or scientific purpose. Or, at least, as regards the last, to no scientific purpose that could not be served more naturally and more conveniently by sectional groupings under fewer common (i.e. generic) names.

Perebea elegans, spec. nov., arbor usque 20 m. alta; ramulis junioribus leviter angulatis fulvo-tomentulosis demum glabratiss; petiolis 5–7 mm. longis; foliis chartaceo-coriaceis oblongo-ellipticis basi paullo oblique acutis apice breviter caudato-acuminatis, ad 12 cm. longis, 5 cm. latis, plerumque minoribus, supra glabris, subtus pallidioribus minute praecipue ad nervos venasque puberulis; nervis lateralibus circa 12 solum subtus cum venis reticulatis mediocriter prominulis; receptaculis masc. pseudaxillaribus fasciculatis circa 3 (pedunculis vix 5 mm. longis) globosis 7 mm. crassis; bracteis minutis squamiformibus imbricatis; tepalis 4.1 mm. longis, apice valde incrassato-concavis vel -cucullatis minutissime puberulis; filamentis 4 crasso-cylindratis, 2 tepalis distincte longioribus; receptaculis fem. ignotis.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 603* (type, Field Museum).

The floral structure is very similar to that of *Helicostylis*, and in the absence of pistillate material the generic identity can not be positive. The validity of *Helicostylis*, however, on the basis of a completely superior ovary and slender styles, may be questioned.

Among *Perebeas* our tree resembles most, apparently, *P. laurifolia*, from which its much smaller receptacles separate it. Nevertheless it has recently been named "*Brosimum Uleanum* Mildbr." Compare also *Pseudolmedia scabra*!

Perebea chimiqua, spec. nov., ad *P. guianensem* valde vergens, sed foliis basi rotundato-acutis haud cordatis, subtus distincte ubique scabriusculis, nervis lateralibus haud vel rarissime parceque hirsutulis; receptaculis masc. 5 mm. diam. (pedunculis circa 6 mm. longis); bracteis 3–4-seriatis late ovatis obtusis vel vix acutis fere 1.5 mm. latis, plus minusve strigosis; tepalis 4, apice paullo incrassatis; filamentis brevissimis; antheris subrotundatis fere 0.75 mm. latis.—Peru: San Antonio, Alto Río Itaya, Dept. Loreto, *Williams 3412* (type, Field Museum).

Ducke has remarked that the foliage aspect of *P. guianensis* Aubl. is that of *Castilla Ulei* Warb. One would never so describe our plant, for the leaves are not even slightly cordate. It is more scabrous than Aublet's tree and lacks (practically) the hirsutulous

hairs that, at least in some degree, are always present on the leaf nerves of the latter. The native name was recorded by the collector as "chimiqua."

Ogcodeia Tessmannii Mildbr. Notizbl. 10: 189. 1927.

Williams under number 3511 has found the hitherto unknown pistillate plant of this species—at least I refer it here with no hesitancy, so exactly does the foliage match the staminate material of Tessmann. Williams collected it along the Río Itaya at San Antonio, and noted the Quichua name as "naccho-huasú." The heads are subglobose, nearly 2.5 cm. thick, the inner series of large bracts triangular-ovate, acuminate, most minutely puberulent as also the rigid-aculeate bractlets 4–5 mm. long.

Ogcodeia tamamuri, spec. nov., ut videtur proxima *O. caloneurae* sed ramulis solum minutissime sparseque puberulentis et nervis venisque inconspicuis; foliis breviter (circa 1 cm.) caudato-acuminatis, plerumque circa 2 dm. longis, 6 cm. latis.—Peru: Timbuchi on the Río Nanay, Dept. Loreto, *Williams 992* (type, Field Museum).

This staminate specimen has the receptacles, bracts, and bractlets of *O. ternstroemiiflora* Mildbr., but more nearly the foliage of *O. caloneura* (Hub.) Macbr. It differs at once from *O. glabra* (Spruce) Mildbr. in its short petioles and relatively fine venation. So, as it is aberrant if referred to any of these three species, it at present at least, so far as the trees compared are concerned, requires a name of its own, which may well be the native one.

Ogcodeia Ulei (Warb.) Macbr. has been collected in Yurimaguas at Puerto Arturo by Williams (5194) and also by Killip and Smith who, however, consider their specimen as representing *Naucleopsis macrophylla* Miq., a disposition in which I can not agree.

Sorocea opima, spec. nov., fruticosa; ramulis sparse puberulis; petiolis 7–9 mm. longis; foliis oblongo-ellipticis integris vel undulato-marginatis chartaceis vix nitidis glabris supra obscure subtus conspicue reticulato-venosis, nervis lateralibus primariis circa 12, basi paullo inaequilateris subacutis vel rotundatis, apice caudato-acuminatis, acumine ad 2 cm. longo, ad medium 5 mm. lato, interdum fere 2 dm. longis et 6 cm. latis, vulgo minoribus; racemis fem. extra-axillaribus, dense puberulis, rhachidibus crassis, usque ad 5 cm. longis; fructibus demum glabris 1.5 cm. longis, 1 cm. crassis.—Peru: Caballo-cocha, Dept. Loreto, *Williams 2357* (type, Field Museum).

In its foliage most like *S. Ulei* Warb., with broader elliptic-obovate leaves. The large fruits appear to be distinctive.

Roupala Dielsii, spec. nov., arbuscula ubique glabra; ramulis gracilibus pauciramosis dense foliatis; foliis oblongo-ellipticis vel interdum paullo obovatis in petiolum brevem 3–5 cm. cuneato-attenuatis apice breviter late acuminatis, demum subcoriaceis, 10 cm. longis et 4 cm. latis supra nitidulis vix manifeste venosis, subtus opacis, venis lateralibus leviter elevatis obscure reticulatis, ad apicem haud prominente denticulatis infra medium undique integris; racemis folio subaequalibus glabris vel glabrescentibus, solum ovario rufo-tomentoso, cum floribus vix 2 cm. latis; pedicellis circa 3 mm. longis, floribus circa 3.5 mm. longis; stylo circa 6 mm. longo, stigmate distincte incrassato-clavato.—Peru: Along Río Itaya, Dept. Loreto, *Williams 114* (type, Field Museum).

The aspect of this shrub is not altogether that of *Roupala*, but the anthers are pedicellate and the stigma is terminal, in accord with the generic character. Its alliance is probably with *Roupala rhombifolia* but the red pubescence that, at least in some degree, is present in that species is here lacking, and the somewhat differently shaped leaves are borne on much longer petioles. There is also a floral difference.

Roupala Raimondii, spec. nov., ut videtur arbuscula; ramulis glabris, apice evanescenter rufo-pubescentibus, gracilibus, dense foliosis; foliis 4–7-jugis demum ad 2 vel 2.5 dm. longis, glabris; petiolis ad 4 cm. longis; foliolis oblique ovato-lanceolatis basi valde inaequalibus subintegris cuneatis, basi apiceque exceptis grosse spinescenti-serratis, ad 10–14 cm. longis et 3.5–4 cm. latis, terminali paullo majore, sed omnibus plerumque minoribus, venis venulisque utrinque obscure laxaeque reticulatis, supra subnitidulis subtus opacis rufidulis; acumine integro, 1.5–2 cm. longo; dentibus plerumque 4 mm. longis, basi 2.5 mm. latis vel ad 6 mm. longis, basi 3.5 mm. latis, haud vel vix incurvis sensim apiculatis, sinubus definite acutis; racemis ignotis.—Peru: Crown of Sierras, Tarapoto, Dept. San Martín, 750 m., December, 1929, *Williams 5997* (type, Field Museum). Between Moyobamba and Tarapoto, *Raimondi* (Herb. Berol.).

With a number of names already available for sterile *Roupalas* with pinnate leaves, the wisdom of adding another to the list may be questioned, but expediency seems to sanction it in this instance. The original vegetation at Tarapoto has been largely destroyed, and since no collector except Williams of the many who have sought species in that locality have apparently found this shrub since *Raimondi*, it must be, as Williams indicates, rare. A definite record of it, therefore, may be worth while, especially as it does not seem to be the young foliage of a species with simple leaves on the older branches or it would by now have been found in the same region. *Roupala complicata* is known from Moyobamba, but I think it is always simple-leaved. Among pinnate-leaved species our plant

suggests *R. heterophylla*, *R. adiantifolia*, and *R. affinis*, but in the shape of the leaflets and in the nature of the teeth it is, precisely at least, separable. My description is drawn in part from Raimondi's leaves, but undoubtedly they are of the same species as Williams'.

Roupala complicata HBK. To this species I recently referred *Killip & Smith 24891* from San Ramón, Dept. of Junín, several other collections from the same region, and one from Tarapoto (*Williams 5703*). Weberbauer had earlier collected the same tree a number of times and in the Dahlem herbarium his specimens are determined without question as *R. complicata* HBK. A sheet of the latter, "ex herb. Humboldt," is at Dahlem; it is not too poor, and I should never have questioned the identity of the recent material with it if someone had not determined the latter as *R. Gardneri* Meisn.!

I think the diverse opinion rests mostly upon the question of the validity of the latter species. The Peruvian plant matches it slightly better in leaf form, the Colombian tree having mostly less acuminate leaves. In a series of specimens the differences in pubescence, including color, brought out by Meisner in DC. Prodr. 14: 428, appear to exist in degree. I must say that at present I see no reason for distinguishing the Peruvian tree, even if the Brazilian *R. Gardneri* is really another species.

Panopsis acuminata (Meisn.), comb. nov. *Andripetalum rubescens* Schott, var. *acuminatum* Meisn. in DC. Prodr. 14: 346. 1856.

Klug under his number 1540 has collected at Mishuyacu near Iquitos an exact match of the type of this species. The example found by Mr. Klug was 8 m. high with cream-colored flowers. With this confirmation of character, the plant seems to represent a species amply distinct from both *A. Sprucei* and *P. rubescens* in its thread-like but stiff pedicels 10–12 mm. long and glabrous inflorescence. Its leaves vary from acute to long-acuminate. It seems evident that *A. Sprucei* Meisn. op. cit. 347 is only a variety or more likely only a race of *P. rubescens*. In herbaria there is some confusion in the Spruce labels between *A. Sprucei* and *P. acuminata*, but the latter is at once marked by its pedicels.

Williams, under numbers 1121 and 1044, has collected on the Río Nanay a variant of *P. rubescens* which has the characteristic fulvous-pubescent racemes and lax short pedicels of that species (including *A. Sprucei*) but conspicuously acuminate leaves. This small tree may be known as

Panopsis rubescens (Pohl) Schott, var. **simulans**, var. nov., foliis longe acuteque acuminatis.—Peru: Timbuchi on the Río Nanay, Dept. Loreto, *Williams 1044* (type, Field Museum). Also at Manfina, *Williams 1121*.

Vochysia diversa, spec. nov., glaberrima praeter inflorescentiam minutissime parceque puberulam; ramulis subteretibus fere nigrescentibus ut videtur decorticantibus; petiolis 0.5–1 cm. longis; foliis verticillatis rigido-coriaceis in sicco plus minusve nigrescentibus supra nitidulis subtus fere opacis, costis lateralibus ubique tenuibus paullo prominulis mediocriter reticulatis, oblongo-lanceolatis vel -ellipticis, basi sensim in petiolum attenuatis apice rotundatis interdum brevissime emarginatis haud mucronulatis, 8–12 cm. longis, 2.5–3.5 cm. latis; inflorescentiis anguste cylindraceo-pyramidatis circa 1–1.5 dm. longis, ad 3 cm. latis, cincinnis 1–2-floris; bracteis fere lineari-subulatis, ad 7 mm. longis; alabastris suberectis paullo clavatis circa 8 mm. longis; calycis laciniis quatuor majoribus, calcare clavato calyci haud aequilongo adscendenti-curvo; petalis paullo obovatis; stylo glabro apice clavato.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, *Klug 685* (type, Field Museum).

A tree 20 m. high with yellow flowers; apparently very similar to *V. venulosa* Warm., but the petioles much shorter and the leaves narrower. It is distinguishable from *V. Weberbaueri* Beckmann by its oblongish leaves, solitary (–2) flowers, and prominent bracts.

Qualea impexa, spec. nov., glaberrima pedicellis calycibusque plus minusve (vix sericeis) puberulis exceptis; ramulis ut videtur non decorticantibus; petiolis gracilibus 1 cm. longis; foliis ellipticis circa 1 dm. longis, 4.5 cm. latis, basi rotundatis, apice abrupte caudato-acuminatis, acumine obtuso ad 8 mm. longo, imprimis praecipue subtus ad marginem junctim reticulatis, marginibus valde undulatis, flexili-coriaceis; cincinnis in racemos 1- vel paucifloros dense paniculatum dispositis; alabastris ovato-conicis, pedicellis subaequalibus circa 1.5 cm. longis; calcare quam pedicellis bene brevior, dependente, elongato-obovoideo, 7 mm. longo, 3 mm. crasso; petalo late obcordato ad 3.5 cm. longo ad basin breviter unguiculato glabro; anthera marginibus haud barbato; ovario sericeo-pubescente.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 748* (type, Field Museum).

There are probably more names already for Amazonian *Qualeas* than there are species, as many descriptions read very much alike and many specimens look enough alike (I have not seen all the recently described ones). No description or specimen that has come to my notice seems to conform in all respects to *Q. impexa*—perhaps most nearly *Q. macropetala* Spruce. Mr. Klug noted the tree as 24 m. high, with yellow flowers. They are so congested that they appear snarled.

Dichapetalum stipulatum, spec. nov., scandens; ramulis praecipue ad apicem dense fulvo-villosis, demum glabratiss, stipulis tarde deciduis ovato-lanceolatis circa 5 mm. longis fere pinnatifido-fimbriatis; petiolis 3 mm. longis; foliis coriaceo-chartaceis supra costa media excepta glabris subtus ad nervos solum plus minusve fulvo-villosis, nervis lateralibus primariis circa 6 supra cum venis reticulatis rugoso-impressis subtus valde prominentibus, late ellipticis, circa 14 cm. longis, 8 cm. latis, basi rotundatis vel subcordatis, apice abrupte breviter acuminatis; inflorescentia corymboso-paniculata dense rufo-villosa multiflora, ad 1 dm. longa, 1.5 dm. lata; pedicellis 5 mm. longis; petalis "pallide brunneis" circa 2 mm. longis, late spatulatis, profunde bifidis; filamentis anguste marginatis glabris; styli ramis 2; ovario dense piloso.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 1081* (type, Field Museum).

An extraordinary species by virtue of the stipules and the sunken leaf veins, but the flowers very much like those of *D. pedunculatum* Baill.

Tapura coriacea, spec. nov., arbor glabra; ramulis griseo-albis leviter angulatis subcontortis; petiolis 5–8 mm. longis; foliis oblongo-ellipticis, basi cuneato-subrotundatis, acutis, apice subabrupte caudato-acuminatis (acumine ad 1 cm. longo, obtuso), plerumque 8–10 cm. longis, 3.5–4 cm. latis, coriaceis, supra nitidis, nervis vix notatis, subtus opacis nervis venisque inconspicuis; floribus circa 10 ad medium fere petioli insertis, flavis, 5 mm. longis; pedicellis 2 mm. longis cum calyce 4 mm. longo sordide puberulis; sepalis inaequalibus obtusis; corollae lobis ut videtur solum 3 valde dissimilibus, majoribus 2 obovatis apice breviter bifidis, valde 2-cucullatis, intus cum tubo villosol-anatis, minoribus subrotundatis; stamina fertilia 3 inter se aequalia.—Peru: Mishuyacu near Iquitos, Dept. Loreto, *Klug 602* (type, Field Museum).

Perhaps nearest *T. guianensis* Aubl., but the flowers much smaller and the stamens equal. There are certainly only 3 fertile stamens, but otherwise the structure of the corolla and the foliage seem to resemble greatly *T. capitulifera* Baill. (ex char.).

Trigonia virens, spec. nov., liana; ramulis et imprimis costis petiolisque plus minusve subadpresse hirsutulis; foliis adultis demum circa 12 cm. longis, 5–6 cm. latis praeter petiolum et costas fortiores utrinque glabris vix nitidulis, basi acutis vel obtusis, apice subabrupte in acumen longiusculum acutum productis, membranaceis; costis circa 5–8 subtus mediocriter prominulis; inflorescentiis (calycibus solum extus) subviridi-cano-tomentosis 4–8 cm. longis; cincinnis nunc 1- nunc 2–3-floris racemose dispositis; pedunculis 2–3 mm. longis quam pedicellis vix longioribus; bracteis anguste ovato-lanceolatis ad 4 mm. longis; alabastris circa 5 mm. longis; calycis laciniis fere 5 mm. longis; petalis circa 6 cm. longis, 2 carinatis late oblongis.—Peru: Wooded banks of Río Itaya above Iquitos, Dept. Loreto, *Killip & Smith 29539* (type, Field Museum).

Probably as nearly allied to *T. hypoleuca* Griseb. as to any other species, but glabrate; otherwise comparable to *T. Spruceana* Benth. and *T. macrantha* Warm. Its thin and broad leaves distinguish it from the former; its pedunculate flower clusters and hirsutulous leaf nerves from the latter.

Killip and Smith have collected at the same locality (as well as Klug at Mishuyacu) *T. sericea* HBK. of Colombia, or at least I see no pronounced differences. More to have been expected was *T. najazum* Warm., from the upper Amazon, but our material has lenticellate branches and matches well enough the Dahlem Humboldt specimen.

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THE NYCTAGINACEAE AND
CHENOPODIACEAE OF NORTHWESTERN
SOUTH AMERICA

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THE NYCTAGINACEAE OF NORTHWESTERN SOUTH AMERICA

PAUL C. STANDLEY

In connection with the preparation of an account of the Nyctaginaceae of Peru for the flora of that country now almost ready for publication, it was found that the task would be but little greater if all the plants of the family occurring in northwestern South America were treated, hence the present paper. The area covered embraces Bolivia, Ecuador, Colombia, and Venezuela, but most of the species known from the Guianas also are included.

This account of the South American Nyctaginaceae makes no pretension to being a monograph, but is rather a preliminary treatment intended to facilitate the determination of current material received for study. The collections available are altogether inadequate to permit the study of specific variations, in which the family is notoriously prolific.

I know of few groups of plants in which specific differences are so unstable and so baffling. In most of the genera, but particularly in *Neea*, *Torrubia*, and *Mirabilis*, no single character seems to be constant. The natural tendency, with a relatively small series of specimens, is to accord specific rank to each fairly well-marked form; yet long experience with the same family, as it is represented in the United States, indicates that more ample material will prove that some of these forms now isolated will be connected by other intergrading ones. Because of the vagueness of specific limits in such genera as *Torrubia* and *Bougainvillea*, it has been impracticable to prepare satisfactory keys for separating the species, and it is doubtful whether it ever will be possible to compile readily usable keys for them.

The only important genus of the family, as it is represented in South America, whose species may be recognized by really clear-cut characters, is *Boerhaavia*. In Mexico and the southwestern United States, however, the species of the same genus intergrade in quite as tantalizing a manner as those of *Mirabilis*.

There is little reason for expecting that the list of species published here will be greatly increased by further exploration, because most of the species already known are rather widely distributed. Very

extensive collections made recently in Peru have contained only two clearly valid new species of the family. A few additional species in *Torrubia* and *Neea* may be discovered in regions still unexplored.

The study whose results are presented on the following pages is based primarily on the collections in the Herbarium of Field Museum (indicated by the letter F in parenthesis). These are rich in photographs or fragments of types and otherwise authentic material from the Berlin herbarium, the photographs having been obtained by Assistant Curator J. Francis Macbride, with the assistance of a fund provided for the purpose by the Rockefeller Foundation. The material includes some representation of almost every species reported from South America, and it has been possible to consider most of the species described from Brazil, Paraguay, and Argentina.

The work has been greatly facilitated by the loan of all the material of the Nyctaginaceae from the area under consideration in the United States National Museum (W). To Dr. William R. Maxon and Mr. Ellsworth P. Killip the writer is deeply indebted for the opportunity of examining this collection, which is particularly valuable for its numerous Venezuelan specimens.

KEY TO THE GENERA

Embryo straight; flowers mostly unisexual; trees or shrubs, sometimes armed with spines; leaves all or mostly opposite or verticillate (*Pisonieae*).

Stamens included; anthocarp without stipitate glands.

Stamens 5–10; limb of the staminate perianth little or not at all broader than the tube.....1. *Neea*.

Stamens 25–30; limb of the staminate perianth much broader than the tube.....2. *Cephalotomandra*.

Stamens exserted.

Anthocarp fleshy, juicy, without glands; flowers cymose-paniculate, unisexual; stems unarmed.....3. *Torrubia*.

Anthocarp dry, coriaceous, bearing numerous stipitate glands.

Flowers unisexual, in cymes; stigma penicillate; stems often armed with spines.....4. *Pisonia*.

Flowers perfect, in umbels; stigma depressed-capitate; stems unarmed.....5. *Pisoniella*.

Embryo curved; flowers perfect; chiefly herbaceous plants, sometimes woody and then often scandent; leaves opposite or alternate.

Leaves alternate.

Perianth unchanged in fruit; flowers free from the bracts; plants herbaceous or nearly so (*Salpiantheae*)....6. *Salpianthus*.

Perianth much altered in fruit, the lower part enlarged and adherent to the fruit; flowers borne in clusters of 3, each flower adnate to a large colored bract; plants scandent or erect, woody, usually armed with spines (*Bougainvilleae*).

7. *Bougainvillea*.

Leaves opposite.

Perianth lobes valvate. Plants large, sometimes scandent, the leaves often verticillate; flowers minute, umbellate, not involucrate (*Colignonieae*).....8. *Colignonia*.

Perianth lobes induplicate-valvate (*Mirabileae*).

Anthocarp lenticular, with recurved, usually dentate margins; flowers in 3's, subtended by a 3-parted involucre.

9. *Allionia*.

Anthocarp terete or angled, never margined.

Flowers subtended by distinct bracts.10. *Boerhaavia*.

Flowers subtended by a gamophyllous involucre.

11. *Mirabilis*.

1. NEEA R. & P.

Shrubs or trees; leaves opposite or verticillate, rarely alternate, petiolate, entire, coriaceous to membranaceous; flowers unisexual and usually dioecious, small, white, reddish, or green, sessile or pedicellate, commonly tribracteolate at the base, arranged in lateral, axillary, or terminal cymes, rarely solitary; staminate perianth urceolate, globose, or tubular, shortly 4-5-dentate; stamens 5-10, included, the filaments unequal; pistillate perianth urceolate or tubular, constricted above the ovary, often contracted at the mouth; stigma penicillate; anthocarp narrowly or broadly ellipsoid, crowned by the persistent free portion of the perianth.

In this, the largest South American genus of the family, the species are poorly understood, largely because of the lack of ample material. Of some species only staminate branches are known, and of others only pistillate specimens. In most genera of the Nyctaginaceae the species are poorly marked, but in *Neea* it is very difficult indeed to differentiate them satisfactorily. Only a few species are listed here, but a large number have been described from the Amazon Valley of Peru and Brazil. It is probable that many more species are to be found in the wet forests of Bolivia and Colombia, for the

parts of those countries in which they may be expected still are practically unknown botanically. It is noteworthy that no species of *Neea* is reported from Ecuador, although several must occur there, at least on the eastern slopes of the Andes.

Leaves rounded at the apex, firm-coriaceous, closely reddish-tomentulose beneath. 1. *N. obovata*.

Leaves acute or acuminate, comparatively thin.

Leaves permanently tomentose or pilose beneath.

Leaves small, 2.5–4.5 cm. wide. Staminate inflorescence few-flowered, the peduncle long and slender. . . . 2. *N. Bangii*.

Leaves large, 6–15 cm. wide.

Petioles short, 2 cm. long or less. 3. *N. Woronovii*.

Petioles elongate, 4–4.5 cm. long. 4. *N. mapirensis*.

Leaves glabrous beneath at maturity or nearly so.

Inflorescence short-pedunculate, dense, few-flowered, erect.

Leaves green when dried, 6.5–9 cm. wide.

5. *N. dimorphophylla*.

Leaves fuscous when dried.

Inflorescence small, commonly 2–5.5 cm. broad.

Inflorescence densely ferruginous-puberulent or tomentulose. 6. *N. divaricata*.

Inflorescence sparsely ferruginous-puberulent.

7. *N. constrictoides*.

Inflorescence large, 10 cm. broad. 8. *N. Brittonii*.

Inflorescence long-pedunculate, lax, usually many-flowered, commonly pendent.

Leaves fuscous when dried; inflorescence few-flowered.

9. *N. longipedunculata*.

Leaves green when dried; inflorescence many-flowered.

Staminate flowers tubular, more than twice as long as broad.

10. *N. boliviana*.

Staminate flowers urceolate, less than twice as long as broad.

11. *N. anisophylla*.

The key here presented for the separation of the species is a most unsatisfactory one, chiefly on account of the absence of complete material, and because no specimens at all are available for two of the species. Those reported from Bolivia seem to be distinct enough from one another, and it is to be presumed that they are distinct from *N. constrictoides*, on geographic grounds if for no other reason.

Except in one instance, the Bolivian specimens seem to be different from the numerous species known from Peru.

1. *Neea obovata* Spruce ex Heimerl, Beitr. Syst. Nyctag. 38. 1897.

Young branchlets densely reddish-puberulent; leaves opposite, firmly coriaceous, the stout petioles 5–25 mm. long, very densely puberulent; leaf blades obovate or elliptic-obovate, 6–11 cm. long, 3–6.5 cm. wide, broadly rounded at the apex, acute or acutish at the base, when young very densely reddish-puberulent or strigose on both surfaces but in age glabrate, at least above; inflorescence erect, pedunculate, open, corymbiform or paniculate, many-flowered, the branches spreading or ascending, the flowers congested at the ends of the branches; perianth subcampanulate, 3 mm. long, reddish-tomentulose or finally glabrate; stamens 6.

Venezuela: San Carlos on the Río Negro, 1853–54, *Spruce 3128* (F, photo. of type ex herb. Berol.). Ad flum. Guainia vel Río Negro supra ostiam fluminis Casiquiare, in 1854, *Spruce* (W).

The species should be enumerated also for the flora of Colombia, since the type locality is on the boundary between that country and Colombia. This happens to be one of the few easily recognizable and well-marked species of the genus, because of its thick leaves, broadly rounded at the apex, and covered beneath with a minute, bright reddish tomentum.

2. *Neea Bangii* Rusby, Bull. N. Y. Bot. Gard. 4: 435. 1907.

A tree 4.5–6 m. high, the young branchlets ferruginous-tomentulose; leaves opposite or ternate, unequal, rather thin, blackish when dried, the slender petioles 3–8 mm. long, tomentulose or hirtulous; leaf blades elliptic-oblong or mostly oblong-obovate, 6–11 cm. long, 2.5–4.5 cm. wide, abruptly acute or short-acuminate with obtuse tip, slightly lustrous above and minutely appressed-pilosulous or glabrate, beneath sparsely and persistently pilosulous with lax spreading brownish hairs; pistillate cymes few-flowered, 2–4 cm. broad, on very slender, sparsely villosulous peduncles 3–5 cm. long, probably pendent, lax, the bractlets triangular-subulate, 1 mm. long; perianth yellowish, urceolate, 4 mm. long, sparsely ferruginous-tomentulose, especially near the base; fruit black, oval, nearly 15 mm. long and half as thick.

Bolivia: At the foot of Mount Uchimachi, Calapampa, July, 1894, *Bang 2346* (F, W, type collection). Without locality, *Bang 2306* (W). Tumapasa, *Williams 585* (W).

3. *Neea Woronovii*, sp. nov.—Ramuli crassiusculi subdense adpresse ferrugineo-tomentulosi, internodiis usque ad 10 cm. longis; folia opposita vel ternata inaequalia tenuiter coriacea, petiolo crassiusculo 1–1.6 cm. longo dense ferrugineo-tomentuloso; lamina ob-

longa vel obovato-oblonga 13–25 cm. longa 5.5–8 cm. lata abrupte acuminata, basi acuta vel attenuata, supra lucida, in sicco fusca, glabra vel glabrata, costa prominula, nervis vix elevatis, subtus paullo pallidior, ubique minute ferrugineo-hirtula, ad nervos breviter villosula, costa gracili elevata, nervis lateralibus utroque latere c. 11, aliis paullo tenuioribus interjectis, gracilibus, prominentibus, arcuatis, remote a margine conjunctis, nervulis prominulis paucis laxissime reticulatis; inflorescentia feminea axillaris magna laxissime multiflora c. 13 cm. longa et 15 cm. lata, recurva vel pendula, c. 6.5 cm. longe pedunculata, pedunculo ut rami densissime ferrugineo-tomentuloso, ramis gracilibus alternis oppositis vel subverticillatis supra late dichotomis, floribus ad apices ramulorum dense congestis sessilibus; bracteolae subulatae 1.5–2 mm. longae dense ferrugineo-tomentulosae; perianthium valde juvenile c. 2 mm. longum ovato-oblongum acutiusculum densissime tomentulosum.—Colombia: Chingale, Dept. Santander, April 18, 1926, *G. Woronow and S. Juzepczuk 4320* (Herb. Field Mus. No. 605,666, type).

The plant is noteworthy for its long, large, and copiously pubescent leaves, and for the very large and many-flowered inflorescence, covered with a dense reddish tomentum.

4. *Neea mapirensis*, sp. nov.—Ramuli puberuli vel glabrati; folia opposita, petiolo crassiusculo 4–4.5 cm. longo hirtulo vel glabrato; lamina crasse membranacea magna anguste elliptico-oblonga c. 36 cm. longa et 13–15 cm. lata, acuminata, basi acuta vel obtusiuscula, in sicco subfusca, supra glabra vel glabrata, sublucida, costa venisque parum prominulis, subtus paullo pallidior, ubique subdense hirtula vel asperulo-puberula, costa crassiuscula prominente, nervis lateralibus utroque latere c. 13 gracilibus prominentibus subarcuatis angulo c. semirecto adscendentibus remote a margine conjunctis, nervulis paucis laxissime reticulatis parum conspicuis; inflorescentia feminea cymosa breviter pedunculata pauciflora c. 5 cm. longa et ut videtur duplo latior, ramis incrassatis glabratibus, floribus sessilibus vel crasse pedicellatis, bracteolis deciduis; anthocarpium oblongum glabrum 1 cm. longum 5 mm. latum basi obtusum apice calyce persistente minuto coronatum.—Bolivia: San Antonio near Mapiri, alt. 850 m., December, 1907, *Otto Buchtien 1993* (U. S. Nat. Herb. No. 1,398,045, type).

Although the plant is known only from too fragmentary material—two leaves and a detached inflorescence—it seems clearly distinct from all other species of the genus, especially in its very large leaves with copious pubescence. The leaves are somewhat broader than those of *N. Woronovii*, which differs also in having slender branches in the inflorescence.

5. *Neea dimorphophylla*, sp. nov.—Ramuli graciles subteretes viridescens, novellis sparse hirsutis cito glabratibus, internodiis brevibus vel elongatis; folia ternata vel quaterna, interdum opposita,

valde inaequalia, petiolo 5–10 mm. longo gracili hirtello vel glabrato; lamina crasse membranacea, foliorum majorum oblongo-elliptica vel ovata, rare obovata, prope medium latissima, 11–21 cm. longa, 5–9 cm. lata, abrupte acuta vel acuminata, basi acuta vel abrupte contracta et valde inaequalis, in sicco olivaceo-viridis, glabra, supra vix lucida, costa prominente, venis prominulis et plus minusve reticulatis, subtus paullo pallidior, interdum ad costam prominentem sparse pilosa, nervis lateralibus utroque latere c. 10 gracilibus prominentibus angulo lato adscendentibus prope marginem conjunctis, nervulis prominulis et arcte reticulatis; lamina foliorum minorum rotundata vel ovato-rotundata 3.5–6.5 cm. longa et aequilata, apice rotundata et abrupte apiculata, basi rotundata; inflorescentiae femineae axillares et terminales crasse 1.5–3 cm. longe pedunculatae erectae sublaxe pauciflorae, ramis crassiusculis sparse puberulis et pilosis suboppositis, floribus sessilibus et solitariis vel pedicellis valde incrassatis stipatis, bracteolis persistentibus subulatis vix 1 mm. longis sparse pilosulis; anthocarpium oblongum 8–9 mm. longum 4 mm. latum glabrum basin versus obtusum paullo angustatum, apice parte superiore calycis persistente coronatum; stylus breviter exsertus, stigmate penicillato.—Bolivia: Junction of the rivers Beni and Madre de Dios, August, 1886, *H. H. Rusby 2575* (Herb. Field Mus. No. 164,490, type; duplicate in U. S. Nat. Herb.).

In its foliage the Bolivian plant resembles *Neea laxa* Poepp. & Endl., of Peru, but the latter has a conspicuously different inflorescence.

6. *Neea divaricata* Poepp. & Endl. Nov. Gen. & Sp. 2: 45. 1838.

A medium-sized tree with dark green foliage, the branchlets glabrous or sparsely puberulent when young; leaves chiefly opposite, short-petiolate, subcoriaceous, oblong to oblong-elliptic, mostly 8–16 cm. long and 3–7 cm. wide, fuscous when dried, abruptly acute or short-acuminate with obtuse tip, glabrous or nearly so; inflorescences cymose-paniculate, erect, short-pedunculate, usually small and dense, with opposite or alternate branches, the branches sparsely or densely puberulent or glabrate; bractlets lance-subulate, 1–1.5 mm. long, puberulent or glabrate; flowers green, congested; pistillate perianth oblong-urceolate, 2.5–3 mm. long, sparsely ferruginous-puberulent, the limb minutely 5-dentate; stamens 5; anthocarp oblong, glabrous, 8–10 mm. long, obtuse at the base.

Bolivia: Forests of Buenavista, Dept. Santa Cruz, 450 m., *Steinbach 6443* (F). Also in Peru.

There is in the Herbarium of Field Museum a photograph and fragment of *Buchtien 1765* from Bolivia, received from the Berlin herbarium, which, so far as I can tell from the available material, may well be referable to this species, although it is indicated by Heimerl as the type of a new species.

Steinbach gives the vernacular name as "ajillo," and states that ashes obtained by burning the wood are employed for making lye that is used in the preparation of soap.

7. *Neea constrictoides* Heimerl, Beitr. Syst. Nyctag. 37. 1897.

Branchlets glabrous; leaves short-petiolate, the petiole 8 mm. long, the blades oblong-elliptic, 10–14 cm. long, 4–5.5 cm. wide, acuminate, with obtuse tip, cuneate at the base or attenuate to the petiole, glabrous, slightly lustrous above; inflorescences pedunculate, laxly flowered, broadly pyramidal, the branches opposite, sparsely ferruginous-puberulent, the flowers aggregate; pistillate perianth subcylindric, 6.5 mm. long, the teeth minute, acutish; immature fruit oblong-ellipsoid.

Colombia: Villavicencio, Bogotá, *Karsten*.

The plant is known to the writer only from the original description.

8. *Neea Brittonii*, nom. nov. *Neea macrophylla* Britton ex Rusby, Bull. Torrey Club 27: 126. 1900, non Poepp. & Endl. 1838.

Glabrous, drying blackish; petioles very stout, 1–2 cm. long; leaf blades oval, 15–20 cm. long, 7.5–10 cm. wide, short-acuminate, with acute tip, abruptly narrowed to the petiole, membranaceous, the veins 12–16 pairs; cymes 10 cm. broad, on a short stout peduncle, the branches minutely ferruginous-puberulent, stout, the flowers subsessile, rather densely clustered; bractlets lance-linear, 1–2 mm. long; staminate perianth almost 1 cm. long, 3–4 mm. broad, the 5 lobes 1 mm. long, ovate, obtuse; stamens 8, the longest less than half as long as the perianth.

Bolivia: Type collected at the junction of the rivers Beni and Madre de Dios, August, 1886, *H. H. Rusby 2119*. A specimen collected by Pearce at Monterrico also is referred by Britton to the species, of which I have seen no material.

9. *Neea longipedunculata* Britton ex Rusby, Bull. Torrey Club 27: 126. 1900.

A shrub or small tree 4 m. high with slender branches, the young branchlets ferruginous-tomentose, soon glabrate; petioles slender, 3–14 mm. long, sparsely pilose or glabrous; leaf blades fuscous when dried, thick-membranaceous, elliptic-oblong or ovate-oblong, broadest at or below the middle, 8–15 cm. long, 3.5–6 cm. wide, acuminate or long-acuminate, obtuse or narrowly rounded at the base, glabrous, the veins about 13 pairs; pistillate inflorescences small and few-flowered, on filiform pendent glabrous peduncles 5–15 cm. long, 2–6 cm. broad, lax, the slender branches densely ferruginous-tomentulose; bractlets subulate, 1 mm. long or less, ferruginous-tomentulose; perianth tubular, 1 cm. long, sparsely tomentulose or glabrate, 3 mm. wide, the lobes 2 mm. long, subrecurved.

Bolivia: Reis, 450 m., June, 1886, *Rusby 2709* (F, W, type collection). Charopampa, near Mapiri, edge of forest, 570 m., *Buchtien 1627* (W).

The original description is erroneous in several particulars, especially in describing the leaves as obovate.

10. *Neea boliviana*, sp. nov.—Ramuli crassi teretes ochracei, internodiis elongatis glabris; folia opposita magna subcoriacea in sicco laete viridia, petiolo 12–18 mm. longo glabro; lamina oblongo-elliptica vel obovato-elliptica, prope medium latissima, 15–26 cm. longa, 7.5–12 cm. lata, subabrupte acuminata vel acuta, acumine ipso obtuso, basi acutiuscula vel abrupte breviterque contracta, glabra, supra opaca, costa prominula, venis inconspicuis, subtus parum pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 13 angulo fere recto abeuntibus leviter arcuatis gracilibus prominulis, nervulis vix prominulis paucis laxissime reticulatis; inflorescentiae masculae terminales et axillares 4 cm. longe pedunculatae cymoso-paniculatae, c. 8 cm. longae et aequilatae vel latiores, ramis alternis vel suboppositis crassiusculis sparse minute tomentulosi vel glabratis, floribus sessilibus vel brevissime crasse pedicellatis aggregatis, bracteolis ovato-oblongis dense ferrugineo-tomentulosi vix 1 mm. longis; perianthium tubulosum 7–8 mm. longum sparse ferrugineo-puberulum vel glabratum versus basin sensim angustatum sub orem paullo contractum et 2.5 mm. latum, dentibus minutis late triangularibus vix 1 mm. longis erectis.—Bolivia: Antahuacana, valley of the Río Espíritu Santo about 160 km. northeast of Cochabamba, alt. 750 m., June, 1909, *Otto Buchtien* 4732 (U. S. Nat. Herb. No. 1,398,053, type).

Well marked by the large and broad, bright green, glabrous leaves, and by the ample, many-flowered inflorescence.

11. *Neea anisophylla* Ernst, *Flora* 57: 215. 1874. *N. Wiesneri* Heimerl, *Bot. Jahrb. Engl.* 11: 89. *pl.* 2, *f.* 5. 1889.

A shrub or small tree, usually 3 m. high or less, glabrous throughout or nearly so; leaves thick-membranaceous, opposite, bright green when dried, short-petiolate, the slender or stout petiole 2–10 mm. long; leaf blades elliptic-lanceolate or oblong-lanceolate, sometimes ovate-lanceolate, 6–23 cm. long, 2.5–9 cm. wide, usually acuminate or long-acuminate, often merely acute, usually strongly oblique and acute at the base; inflorescences very lax, many-flowered, on long slender filiform peduncles, pendent, corymbiform, the flowers pedicellate or sessile and glomerate, the bractlets minute; staminate perianth broadly urceolate, yellow, yellowish white, or green, 5–5.5 mm. long, glabrous or nearly so; stamens 6–8; pistillate perianth ovoid-tubular, 4.5–5 mm. long; anthocarp ellipsoid, glabrous, 6–7 mm. long.

Venezuela: Type from Catuche, Caracas, *Ernst*. Chacaito Gorge, near Caracas, 800–1,000 m., in forest, *Pittier* 9476 (W). La Guaira, *Moritz* 1464 (F, photo. and fragm. ex herb. Berol.; W). Bosque de Catuche, above Caracas, 1,200–1,800 m., *Pittier* 6298 (F, W). Curucutí, between Caracas and La Guaira, 1,100–1,700 m., *Pittier* 10390 (W), 10391 (W). Hacienda Taborda, near El Palito, Carabobo, *Pittier* 7667 (W). Pico Paloma, *Eggers* 13520 (W).—Colombia: Reported by Heimerl from the vicinity of Bogotá, *Karsten*.

Pittier 11950 from the upper Carrasquel Valley probably represents an undescribed species. The single specimen that I have seen is unsatisfactory for purposes of description.

2. CEPHALOTOMANDRA Karst. & Triana

Unarmed trees or shrubs; leaves opposite, petiolate, entire; flowers dioecious, small, yellowish or reddish, tribracteolate, pedicellate, arranged in terminal long-pedunculate many-flowered cymes; staminate perianth urceolate-campanulate, abruptly constricted below the middle, the limb shallowly 5-lobate; stamens numerous, about 25–30, included, the filaments stout, unequal; pistillate perianth with a persistent 5-lobed limb; anthocarp woody, oblong, costate.

One other species of the genus has been described from Panama.

1. *Cephalotomandra fragrans* Karst. & Triana ex Karst. *Linnaea* 28: 430. 1856. *Pisonia Cephalotomandra* Heimerl, *Beitr. Syst. Nyctag.* 34. 1897.

A tree 7.5 m. high; leaves slender-petiolate, the blades elliptic-oblong to elliptic, mostly 8–16 cm. long and 4.5–9 cm. wide, acute or obtuse, rounded to acutish at the base, glabrous, subcoriaceous; inflorescences lax, many-flowered, about 10 cm. broad, the slender branches minutely fulvous-puberulent; bractlets lance-subulate, less than 1 mm. long; staminate perianth yellow, 3 mm. long, glabrate or obscurely puberulent; anthocarp about 13 mm. long (even larger according to description), 10–12-costate.

Colombia: Western declivity of the mountains of Bogotá, at 400–1,200 m., *Triana 998* (F; photo. and fragm. of type ex herb. Berol.).

In the original description it is stated that the fruit is as large as an English walnut, but this seems altogether improbable, in consideration of the size of the single dried one that I have seen.

3. TORRUBIA Vell.

Unarmed shrubs or trees, glabrous or pubescent; leaves chiefly opposite and petiolate, entire, membranaceous to coriaceous; flowers small, dioecious, reddish, greenish, or yellowish, exinvolucrate, 2–3-bracteolate, sessile or pedicellate, arranged in lateral or terminal, pedunculate cymes; staminate perianth obconic-campanulate, the limb 5-dentate; stamens 6–10, exserted, the filaments unequal; pistillate perianth tubular; anthocarp drupaceous, red to black, oblong, the exocarp fleshy and juicy.

By most botanists the plants comprising this genus have been referred to *Pisonia*, but there are excellent and basically important characters that distinguish the two groups, consequently it is illogical and unreasonable to combine them under *Pisonia*. Although some

of the species are not well marked, they are much more clearly differentiated than in the genus *Neea*. Only one species of *Torrubia* is known from Peru.

Inflorescences globose and very dense, headlike. Leaves small, rounded to subacute at the apex. 1. *T. ferruginea*.

Inflorescences open, sometimes small but distinctly branched.

Leaves densely or sparsely pubescent beneath over the whole surface when young, in age sometimes glabrate except along the costa.

Leaves rounded or very obtuse at the apex. . . . 2. *T. floribunda*.

Leaves chiefly acute or acuminate.

Branchlets and lower surface of the leaves with a fine close ferruginous tomentum; leaves often glabrate beneath in age.

Inflorescences small and few-flowered, dense; leaves chiefly acute to attenuate at the base. 11. *T. salicifolia*.

Inflorescences larger, many-flowered and open; leaves mostly obtuse at the base. 3. *T. Rusbyana*.

Branchlets pilose with spreading hairs.

Leaves chiefly obovate, broadest above the middle.

4. *T. suspensa*.

Leaves oblong to elliptic, broadest at or below the middle.

Leaves densely soft-pilose beneath. 5. *T. pubescens*.

Leaves glabrate in age except beneath along the costa.

6. *T. boliviana*.

Leaves glabrous beneath or nearly so, even when young.

Leaf blades small, 3 cm. long or less, rounded or very obtuse at the apex. 7. *T. microphylla*.

Leaf blades much larger, mostly acute or acuminate.

Leaves bright green when dried; perianth glabrous or nearly so.

8. *T. pacurero*.

Leaves fuscous when dried; perianth often puberulent or tomentulose.

Staminate perianth 5–5.5 mm. long, densely rufous-tomentulose; leaves large, mostly 5.5 cm. wide or more.

9. *T. uberrima*.

Staminate perianth 3.5–4 mm. long; leaves usually narrower.

Veins of the leaves numerous and close together, conspicuous, ascending at a very acute angle; leaves normally broadest above the middle. . 10. *T. fragrans*.

Veins few, distant, divergent at a comparatively broad angle; leaves mostly broadest at or near the middle.

Inflorescence densely rufous-tomentulose, small and few-flowered 11. *T. salicifolia*.

Inflorescence glabrate or with sparse short hairs.

12. *T. Olfersiana*.

1. *Torrubia ferruginea* (Klotzsch) Standl. Contr. U. S. Nat. Herb. 18: 100. 1916. *Pisonia ferruginea* Klotzsch ex Choisy in DC. Prodr. 13²: 445. 1849. *T. cephalantha* Standl. ex Pittier, Pl. Usual. Venez. 177. 1926.

A deciduous shrub or tree 3–10 m. high, the young branchlets densely rufous-tomentulose; leaves thick-membranaceous or subcoriaceous, small, opposite or verticillate, unequal, fuscous when dried, the petioles short, rufous-tomentulose; leaf blades oblong-elliptic to rounded, mostly 2–5.5 cm. long, rounded to acutish at the apex, acute to rounded at the base, when young densely rufous-hirtulous beneath but in age usually glabrate; flowers in very dense, spherical heads about 1.5 cm. in diameter, densely ferruginous-tomentose, sessile; staminate perianth yellow, 3.5 mm. long; anthocarp oblong, 7 mm. long, sparsely tomentulose or nearly glabrous.

Venezuela: Without locality, *Karsten 148* (F; photo. and fragm. ex herb. Berol.; presumably the type collection, which was reported as from Colombia, probably in error). Colonia Tovar, *Fendler 1314* (F). Between Caracas and La Guaira, *Rose 21829* (W). Zigzag, November 2, 1916, *Rose* (W). El Valle, *Eggers 13162* (W). Barquisimeto, Lara, "not common," *Saer 5* (W). Bare hills north of Barquisimeto, *Saer 168* (W). Above Las Ruinas, near Caracas, on grassy slopes, 1,000 m., *Pittier 9462* (W). Bosque de Catuche, above Caracas, 1,200–1,800 m., *Pittier 6192* (F, W). Lower Catuche wood above Caracas, 1,000–1,200 m., *Pittier 7136* (W). Guaremales, Carabobo, 10–100 m., *Pittier 8837* (W); in forest, *Pittier 8857* (W). Hacienda Panarigua, Valley of Puerto La Cruz, on road to Cagüita, dry wooded hills, *Pittier 9210* (W).

Vernacular name, "cazabito." Regarding the name, Pittier (loc. cit.) makes the following statement: Various trees and shrubs of the family Nyctaginaceae, such as *Torrubia Olfersiana* and *Neea anisophylla*, are given this name, which refers to the characteristic structure of the wood, reminding one at a distance of dry yuca roots or cassava bread. This wood, which is light in weight, porous, and useless, is composed of numerous vascular bundles, derived from the cambium, which are collected about the original bundles and become atrophied and dried, leaving in their place numerous pores. Among the fibers thus formed there are seen many canals and cells that contain crystals of sodium oxalate.

2. **Torrubia floribunda** (Hook. f.), comb. nov. *Pisonia floribunda* Hook. f. Trans. Linn. Soc. 20: 193. 1847.

A tree with rough bark and broadly spreading crown, the branchlets pale, the young ones densely fulvous-puberulent; leaves short-petiolate, thick-membranaceous, mostly clustered on short lateral spurs, the blades oval to elliptic or rounded, about 3 cm. long, rounded or obtuse at the apex, acutish at the base, hirtulous or puberulent on both surfaces, more densely so beneath; staminate inflorescences small and rather dense, many-flowered, short-pedunculate, densely puberulent; perianth broadly obconic, 3 mm. long, sparsely pale-puberulent; young anthocarp ellipsoid-oblong, densely pale-tomentose, costate, 5 mm. long.

Ecuador (Galápagos Islands): Type from James Island, *Darwin*. Duncan Island, at 335 m., *Stewart 1462* (W). James Bay, James Island, 135–500 m., *Stewart 1464* (W). Reported also from Abingdon, Albemarle, Charles, and Indefatigable Islands.

The tree is said to be common on many of the islands, often forming dense forest or thickets. Sometimes it grows as a low shrub.

3. **Torrubia Rusbyana** (Heimerl), sp. nov. *Pisonia Rusbyana* Heimerl in herb.—Frutex vel arbor, ramulis crassiusculis subteretibus griseis vel ochraceis, novellis dense minute ferrugineo-puberulis, internodiis brevibus vel elongatis; folia petiolata crasse membranacea in sicco fusciscentia opposita vel ternata, petiolo gracili 3–40 mm. longo puberulo vel hirtulo; lamina lanceolato-oblonga, elliptico-oblonga vel elliptica, 6–14 cm. longa, 2–6.5 cm. lata, sensim vel abrupte acuta vel acuminata, acumine acuto vel obtuso, basi obtusa vel acutiuscula et saepe obliqua, juvenilis utrinque minute rufo-tomentulosa, adulta glabrata vel subtus sparse hirtula, supra ad costam prominulam sparse hirtula, opaca, venis obscuris, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 9 gracilibus prominulis angulo latiusculo adscendentibus irregularibus remote a margine obscure conjunctis, nervulis obsoletis; inflorescentia mascula terminalis 1–5.5 cm. longe pedunculata multiflora subaxe ramosa 3.5–6 cm. lata erecta, ramulis dense ferrugineo-puberulis, floribus sessilibus vel brevissime pedicellatis, bracteolis vix 0.5 mm. longis ovato-lanceolatis; perianthium obconicum 3.5–4 mm. longum basi acutum sparse minute puberulum vel fere glabrum; stamina c. 8 perianthio duplo longiora; anthocarpium ellipsoideo-oblongum 7 mm. longum ferrugineo-tomentellum apicem versus paullo angustatum.—Venezuela: Lower Orinoco, in 1896, *H. H. Rusby and Roy W. Squires 422* (Herb. Field Mus. No. 161,043, type; duplicate in U. S. Nat. Herb.). Hacienda Puerto La Cruz, Coastal Range, in 1918, *Pittier 8091* (W).

The fruiting specimen collected by Pittier has longer petioles than the type and a more closely appressed pubescence, but it appears to represent the same species as the material from the Orinoco.

4. *Torrubia suspensa* (Heimerl) Standl. Contr. U. S. Nat. Herb. 18: 101. 1916. *Pisonia suspensa* Heimerl, Med. Rijks Herb. 19: 34. 1913.

A tree with broadly drooping branches, the branchlets densely rufous-pubescent; petioles 4–8 mm. long; leaf blades broadly elliptic to obovate-elliptic, 3.5–8.5 cm. long, 2–3 cm. wide, acutish at the base, short-acuminate, papyraceous, brownish when dried, sparsely hirtous above, densely subhirsute beneath, the lateral nerves 6–9 pairs; pistillate inflorescence borne on a peduncle 3–5 cm. long, up to 4.5 cm. wide, lax, many-flowered, umbellately branched at the base, the flowers subsessile or shortly pedicellate; perianth 3–3.5 mm. long, more or less hirtous.

Bolivia: In forest between Guaridi and Río Grande, 600 m., December, 1910, *Herzog 1285* (F, photo. of type ex herb. Berol.).

5. *Torrubia pubescens* (HBK.), comb. nov. *Pisonia pubescens* HBK. Nov. Gen. & Sp. 2: 218. 1818.

A shrub or tree, sometimes 5.5 m. high, the young branchlets densely tomentose or short-villous; leaves opposite or quaternate, often very unequal, membranaceous, fuscous when dried, the petioles seldom more than 5 mm. long; leaf blades oblong to elliptic, mostly 5–9 cm. long and 2–4.5 cm. wide, acute or short-acuminate, at the base acute or obtuse and more or less oblique, copiously pilose with weak fulvous hairs on both surfaces, more densely so beneath, somewhat paler beneath; inflorescences chiefly in the forks of the branches, erect, slender-pedunculate, few-flowered and rather lax, the flowers pedicellate; staminate perianth yellowish, obconic, acute at the base, 4 mm. long, sparsely and minutely puberulent or glabrate; stamens 8; pistillate inflorescence and fruit unknown.

Venezuela: Type from banks of the Río Apures, *Humboldt & Bonpland*. Without data, *Humboldt* (F; photo. of specimen in herb. Willd. ex herb. Berol.; perhaps the type). In hedges, Llanos de La Rubiera, Guárico, *Pittier 12333* (F, B, W). Culebra Lagoon near San Carlos, Cojedes, in savanna bushes, *Pittier 11704* (W).

Heimerl has indicated *Pittier 12333* in the Berlin herbarium as a new species, but this collection agrees perfectly with the original description of *Pisonia pubescens*, and I see no reason for distinguishing it. *Pittier* describes *No. 11704* as a vine with green flowers. Probably there is some mistake in ascribing a scandent habit to the plant, or else it merely has long branches that are more or less supported on other shrubs.

6. *Torrubia boliviana* (Britton) Standl. Contr. U. S. Nat. Herb. 18: 100. 1916. *Pisonia boliviana* Britton ex Rusby, Bull. Torrey Club 27: 125. 1900.

Young branchlets pilose with short, spreading, fulvous or ochraceous hairs; petioles slender, 1.5 cm. long or less, pilose like the branch-

lets; leaf blades membranaceous, fuscous when dried, elliptic to elliptic-oblong or ovate-elliptic, broadest at or near the middle, 10–18 cm. long, 4–8 cm. wide, acute or abruptly acute at the apex, with very obtuse tip, obtuse to acute at the base, oblique, and often abruptly contracted and short-decurrent, glabrous above or nearly so, beneath sparsely pilose over the whole surface with long spreading hairs, densely pilose along the costa, in age glabrate except along the costa; staminate inflorescences terminal and axillary, small and few-flowered, short-pedunculate, only 1–2 cm. long, the branches sparsely villosulous, the flowers sessile or nearly so; perianth obconic, 3.5 mm. long, glabrous or nearly so; stamens 10; pistillate inflorescence and fruit unknown.

Bolivia: Junction of the rivers Beni and Madre de Dios, *Rusby 2502* (F, W; type collection).

Rusby 2501, mentioned in the original description, is a species of *Neea*.

7. ***Torrubia microphylla*** (Heimerl) Standl. Contr. U. S. Nat. Herb. 18: 100. 1916. *Pisonia microphylla* Heimerl in Urban, Symb. Antill. 7: 215. 1912.

A shrub or small tree, the young branchlets ferruginous-puberulent; leaves very small, fuscous when dried, subcoriaceous, opposite, the petioles 1.5–2.5 mm. long; leaf blades varying from oblong or oblanceolate-oblong to oval or suborbicular, 2.8 cm. long and 2 cm. wide or smaller, rounded at the apex, rounded to attenuate at the base, at first ferruginous-puberulent beneath along the costa but in age glabrous; staminate inflorescences terminal, short-pedunculate, laxly few-flowered, 3 cm. wide or less, sparsely appressed-hirtulous, the flowers sessile or nearly so; perianth 4–4.5 mm. long, sparsely and minutely puberulent or almost glabrous; stamens 7–8.

Venezuela: El Valle, Margarita Island, *Miller & Johnston 231* (F, type collection, also photo. of type ex herb. Berol.; W). Around El Palito, near Puerto Cabello, in the cactus formation, at sea level, *Pittier 6421* (F, photo. ex herb. Berol.; W).

Pittier 6421 has leaves slightly broader than those of the type, and it has been determined by Heimerl as a new form of *Pisonia microphylla*, but it scarcely merits the distinction of a name.

8. ***Torrubia pacurero*** (HBK.) Standl. Contr. U. S. Nat. Herb. 18: 101. 1916. *Pisonia pacurero* HBK. Nov. Gen. & Sp. 2: 218. 1818.

A shrub or small tree, sometimes 7 m. high, the branchlets glabrous or only obscurely puberulent; leaves opposite or ternate, membranaceous, bright green or yellowish green when dried, on slender and often elongate petioles; leaf blades chiefly elliptic-oblong to elliptic or ovate-elliptic, sometimes oblong-lanceolate, broadest at or below the middle, 5.5–16 cm. long, 2–6.5 cm. wide, acute to long-acuminate, at the base acute or obtuse, often oblique, some-

times abruptly decurrent, glabrous; staminate inflorescences terminal, on slender, short or elongate peduncles, many-flowered, dense or open, the branches glabrous or nearly so; perianth green, whitish, or reddish, obconic, 4 mm. long, glabrous; stamens 8; pistillate perianth tubular, 2 mm. long; anthocarp narrowly oblong, 1 cm. long, conspicuously costate, glabrous.

Trinidad: Island of Patos, a small tree with brittle wood, *Broadway* 2714 (F).—Venezuela: Cumaná, *Humboldt* (F; photo. of type ex herb. Berol.; type locality given in the original description as "locis umbrosis siccis Novae Andalusiae"). Aricana, on hills, *Broadway* 345 (W); near the shore, *Broadway* 609 (W); seashore, *Broadway* 807 (W). Cristóbal Colón, *Broadway* 691 (W); on hills, *Broadway* 198 (W); near the sea, *Broadway* 232 (W). Hacienda Taborda, near El Palito, Carabobo, *Pittier* 7667 (F), 7677 (F, W; these two numbers are mixed with material of *Neea anisophylla*). Hacienda Puerto La Cruz, Coastal Range, Distrito Federal, *Pittier* 8093 (W). Río Turbio, near Barquisimeto, Lara, *Saer* 237 (W). Río Chico, Miranda, *Jahn* 1275 (W). Around El Palito, near Puerto Cabello, Carabobo, in the cactus formation, at sea level, *Pittier* 6422 (F, W); on hills, *Pittier* 9074 (W). Puerto Cabello, common, *Curran & Haman* 1180 (F, W); *Curran & Haman* 1169 (W), 1147 (W). Without locality, *Curran & Haman* 1221 (W). Between Adecora and Pueblo Nuevo, Paraguana, *Curran & Haman* 563 (W). Isla de San Carlos, *Curran & Haman* 784 (W). Santa Lucía, *Curran & Haman* 1097 (F, W).—Colombia: "Colombia," *Karsten* 18 (F; fragm. ex herb. Berol.). Region of Santa Marta, near sea level, *H. H. Smith* 2741 (F, W), 2096 (F, W), 397 (F, W).

This is a well-marked species, easy to recognize because of its thin, bright green leaves, and almost complete lack of pubescence. The name has been applied sometimes to the forms referable to *Torrubia fragrans*, and even to other species not very closely related.

The vernacular names "pacurero," "casabito," and "fruta de culebra" are reported from Venezuela.

9. *Torrubia uberrima*, sp. nov.—Ramuli novelli dense minuteque adpresse ferrugineo-tomentulosi subteretes graciles, internodiis brevibus; folia opposita firme membranacea in sicco fusco-brunnea longiuscule petiolata, petiolo gracili 1.5–3 cm. longo dense ferrugineo-tomentuloso; lamina elliptico-oblonga vel ovato-oblonga, prope vel infra medium latissima, 13–16.5 cm. longa, 5.5–7 cm. lata, acuminata, basi valde obliqua et uno latere abrupte decurrens, glabra vel in statu juvenili ad costam minute ferrugineo-tomentulosa, supra opaca, costa venisque vix prominulis, subtus fere concolor, costa gracili prominente, nervis lateralibus utroque latere c. 9 gracillimis prominulis angulo semirecto adscendentibus remote a margine laxe conjunctis, nervulis obsoletis; inflorescentia mascula terminalis c. 9 cm. longe pedunculata, pedunculo ut ramuli dense ferrugineo-tomentello erecto, panícula laxè multiflora 6–8 cm. longa 10–13 cm.

lata rotundata, ramis basalibus oppositis vel verticillatis patentibus, floribus sessilibus vel vix 1 mm. longe pedicellatis in cymulas densas paucifloras dispositis; perianthium masculum obconicum 5–5.5 mm. longum basi acutum dense ferrugineo-tomentulosum, lobis brevissimis; stamina c. 6 perianthio fere duplo longiora.—Colombia: Region of Santa Marta, near sea level, September, 1898–1901, *Herbert H. Smith 1873* (Herb. Field Mus. No. 138,714, type; duplicate in U. S. Nat. Herb.).

The type collection was distributed as *Pisonia ferruginea* Klotzsch, to which the plant has no close relationship.

Here may belong the following fruiting specimens from Colombia: San Martín de Loba, Dept. Bolívar, *Curran 371* (W), *184* (W). Curran describes the plant as a tree 6.5 m. high, with a trunk 10 cm. in diameter, vernacular name “clavo cuchillo.”

10. *Torrubia fragrans* (Dum.-Cours.) Standl. Contr. U. S. Nat. Herb. 18: 100. 1916. *Pisonia fragrans* Dum.-Cours. Bot. Cult. ed. 2. 7: 114. 1814. *P. eucalyptifolia* HBK. Nov. Gen. & Sp. 7: 197. 1825.

A tree 15 m. high or less, the trunk up to 30 cm. in diameter, the branchlets grayish- or rufous-puberulent; leaves opposite, often very irregular and unequal, the petioles 3–10 mm. long; leaf blades rhombic-elliptic to obovate-oblong, obovate, or oblanceolate, 3–9 cm. long, 2.5–5 cm. wide, broadest above the middle, at the apex abruptly acute or acuminate to rounded, at the base acute to attenuate, fuscous when dried, firm-membranaceous, glabrous or practically so, the lateral nerves numerous and conspicuous; inflorescences mostly terminal, pedunculate, commonly small and rather few-flowered, 2–6 cm. broad, the branches puberulent or glabrate, the flowers sessile or on pedicels 1–2 mm. long; staminate perianth puberulent; stamens 6–8; anthocarp ellipsoid-oblong, 7–11 mm. long, glabrous.

Curaçao: Hofje Abau, *Curran & Haman 104* (W). Klein Sint Martha, *Curran & Haman 138* (W).—Tobago: Providence Road, a small tree with greenish flowers, *Broadway 3544* (F). Calderhal, *Broadway 3541* (F).—Venezuela: San Juan Mountain, Margarita Island, 600 m., *Johnston 121* (F, W). Between Morón and El Sanchón, Carabobo, *Pittier 12205* (F, W). Cristóbal Colón, a small tree with green flowers, *Broadway 740* (W).—Colombia: Region of Santa Marta, 75 m., *H. H. Smith 396* (F, W). Widely distributed in the West Indies.

The vernacular name “laabra” is reported from Curaçao.

Pittier 12205 is indicated by Heimerl, in the Berlin herbarium, as a new species, but it does not seem to the writer more than a form of *T. fragrans*, differing chiefly in the shape of the leaves, which are unusually narrow, and rounded or very obtuse at the apex.

The locality of *Pisonia eucalyptifolia* is given merely as "inter tropicos Americae." It is possible that it is not really a synonym of *Torrubia fragrans*, although the description agrees well with the plant described here. It seems probable that the proper name for *T. fragrans* is *Torrubia inermis* (Jacq.) Britton (Bull. Torrey Club 31: 614. 1904. *Pisonia inermis* Jacq. Sel. Stirp. 275. 1763). The type locality of Jacquin's species is the region of Cartagena, Colombia. No specimens of *Torrubia* from that locality have been seen by the writer, but if any of the species here listed occurs about Cartagena, it is almost certain to be *T. fragrans*. Jacquin's description is unsatisfactory and incomplete but, so far as it goes, it applies satisfactorily to *T. fragrans*.

11. *Torrubia salicifolia* (Heimerl) Standl. Contr. U. S. Nat. Herb. 18: 101. 1916. *Pisonia salicifolia* Heimerl in Urban, Symb. Antill. 7: 216. 1912.

A small tree, the young branchlets densely ferruginous-puberulent; leaves opposite, fuscous when dried, the petioles 1-11 mm. long; leaf blades chiefly oblong-lanceolate or narrowly elliptic-oblong, mostly 5-9 cm. long and 1.5-3 cm. wide, subabruptly acuminate or long-acuminate, cuneately acute at the base, hirtulous at first but soon glabrate except sometimes along the costa; staminate inflorescence pedunculate, 3 cm. wide or less, the slender branches spreading; pistillate flowers yellowish; staminate perianth ferruginous-hirtulous; stamens 6-7; anthocarp ellipsoid-oblong, 10-11 mm. long.

Trinidad: Type from Moruga, *Broadway* 2421. Buenos Ayres, Erin, May 9, 1919, *Broadway* (F).—British Guiana: Without locality, *Jenman* (F). Pomeroon District, Moruka River, *De La Cruz* 4557 (F).

This is probably no more than a form, and not a clearly defined one, of *T. Olfersiana*.

12. *Torrubia Olfersiana* (Link, Klotzsch & Otto) Standl. Contr. U. S. Nat. Herb. 18: 101. 1916. *Pisonia Olfersiana* Link, Klotzsch & Otto, Icon. Pl. Rar. 36. pl. 15. 1841. *P. Cafferiana* Casar. Nov. Stirp. Bras. 68. 1842. *P. guianensis* Klotzsch in Schomb. Fauna & Fl. Brit. Guian. 1131. 1848, nomen nudum. *P. minor* Choisy in DC. Prodr. 13²: 443. 1849. *P. nitida* Mart. ex Schmidt in Mart. Fl. Bras. 14²: 356. 1872. *P. acuminata* Mart. ex Schmidt, op. cit. 357. 1872. *P. Eggersiana* Heimerl, Bot. Jahrb. Engl. 21: 627. 1896. *P. Schomburgkiana* Heimerl, Beitr. Syst. Nyctag. 34. 1897, nomen nudum. *P. Olfersiana* var. *nitida* Heimerl, Beitr. Syst. Nyctag. 35. 1897. *Torrubia Cafferiana* Standl. Contr. U. S. Nat. Herb. 18: 100. 1916. *T. Eggersiana* Standl. loc. cit. 1916. *T. nitida* Standl. op. cit. 101. 1916.

A shrub or tree, sometimes as much as 15 m. high, the branchlets glabrous or sometimes villosulous or puberulent; leaves chiefly opposite, fuscous when dried, thick-membranaceous or subcoriaceous, the petioles commonly about 1 cm. long; leaf blades oblong to elliptic, usually 9–16 cm. long and 3–6 cm. wide, abruptly acuminate or acute, rarely obtuse, acute at the base, usually glabrous; inflorescences on long or short peduncles, lax and many-flowered, sparsely puberulent or hirtous or almost glabrous; flowers greenish, the perianth sparsely and minutely puberulent; stamens 5–7; anthocarp dark purple, ellipsoid-oblong, 8–12 mm. long.

Tobago: The Widow, *Broadway* 4155 (F). Roseborough Estate, *Broadway* 4532 (F).—Trinidad: Mora Forest via Sangre Grande, *Broadway* 5696 (F). St. Anns, in light forest, June 11, 1922, *Broadway* (F).—French Guiana: "Cayenne," *Jelski* (F; photo. and fragm. ex herb. Berol.).—Surinam: *Kegel* 653 and *Wulfschlaegel* 1005 (reported by Heimerl as *Pisonia Eggersiana*).—British Guiana: Without definite locality, *Schomburgk* 1031, 600, 595 (F; photo. and frags. ex herb. Berol.). Without locality, *Schomburgk* 588 (F; photo. and fragm. ex herb. Berol.). Kabakaburi, Pomeroon District, *De La Cruz* 3315 (F, W), 3317 (F, W). Kamakusa, Upper Mazaruni River, *De La Cruz* 4120 (F). Pomeroon River, *De La Cruz* 3017 (F). Issorora, Aruka River, in hill forest, *Hitchcock* 17550 (W).—Venezuela: Los Teques, Miranda, 1,400–1,500 m., *Pittier* 7499 (W). Quebradita de las Ruinas, Federal District, 800–1,000 m., in light forest, *Pittier* 9463 (W). Cariaquita, Paria Peninsula, *Bond, Gillin & Brown* 246 (W). Mesa de El Sombrero, Guárico, in bushes around savanna, *Pittier* 12371 (W). Quebrada de Chacaito, Federal District, 800–1,000 m., near cascade in forest, *Pittier* 10323 (W).—Brazil: Without locality, *Sello* (F; photo. and fragm. ex herb. Berol.). Rio de Janeiro, *Sello* (F; fragm. ex herb. Berol.). Without locality, *Regnell III*. 1021 (F).—Ecuador: Balao, in forest, *Eggers* 14249 (W).—Bolivia: Bosques del Río Surutú, Dept. Santa Cruz, 400 m., *Steinbach* 7284 (F; photo. and fragm. ex herb. Berol.).

The vernacular name is reported from Venezuela as "salado." *Steinbach* 7284 has been determined by Heimerl as a new species, and it may be distinct from *T. Olfersiana*, but the incomplete material available for examination does not seem to be essentially different.

The material here cited is conspicuously variable in leaf form and in pubescence, but it does not seem practical to separate it into several species. Other related species probably must be reduced to synonymy under *T. Olfersiana*, when more abundant material has accumulated, because the slight differences upon which they have been based probably are not constant.

4. PISONIA L.

Trees or shrubs, erect or more often with long, pendent or clambering branches, often armed with spines; leaves chiefly opposite and

petiolate, entire; flowers dioecious, small, reddish or yellowish green, arranged in sessile or pedunculate cymes, exinvolucrate, 2-3-bracteolate; staminate perianth obconic-campanulate, the limb 5-dentate; stamens 6-8, exserted, unequal; pistillate perianth tubular, the limb 5-dentate; anthocarp coriaceous, clavate to oblong or obovoid, terete and costate or 5-angulate, the angles or costae furnished with one or more rows of viscid stipitate glands.

Anthocarp with glands only along the upper part. . . . 1. *P. zapallo*.

Anthocarp with glands along the whole length of the angles.

Mature fruit 6-10 mm. in diameter, the glands along the angles in two or more rows; spines few or wanting on the flowering branches. . . . 2. *P. macranthocarpa*.

Mature fruit 3-4 mm. in diameter, the glands along the angles in a single row or nearly so; flowering branches usually armed with recurved spines. . . . 3. *P. aculeata*.

1. ***Pisonia zapallo*** Griseb. Goett. Abh. 24: 39. 1879. *P. aculeata* f. *inermis* Kuntze, Rev. Gen. 3²: 265. 1898.

A small tree, unarmed; leaves slender-petiolate, the blades broadly elliptic to ovate, mostly 5-10 cm. long, acute at the base, acute to subobtusate at the apex, when young tomentose beneath, in age sparsely pilose or glabrate; cymes pedunculate, tomentose, the flowers glomerate; staminate perianth 2 mm. long; anthocarp narrowly clavate, 15-20 mm. long, the glands in 2 or more series along each angle above the middle of the fruit.

Bolivia: Río Achira, 1,000 m., *Steinbach* 8223 (F). Sierra de Santa Cruz, 1,600 m., May, 1892, *Kuntze* (F, type collection of *P. aculeata* f. *inermis*).—Also in Argentina.

From Argentina there are reported for this species the vernacular names "palo de zapallo," "zapallo caspi," and "ombú-rá."

2. ***Pisonia macranthocarpa*** Donn. Smith, Bot. Gaz. 20: 293. 1895. *P. aculeata* var. *macranthocarpa* Donn. Smith, Bot. Gaz. 16: 198. 1891. *P. aculeata* var. *pedicellaris* Griseb. ex Heimerl, Bot. Jahrb. Engl. 21: 633. 1896.

A shrub or small tree, 3-4 m. high or sometimes larger, the branchlets puberulent when young but soon glabrate; spines few and often or usually wanting on herbarium specimens, mostly straight; leaf blades elliptic to oval or obovate, acute at the base, acute to acuminate at the apex, puberulent or short-villous beneath along the costa or often glabrate in age; inflorescence pedunculate, the staminate cymes dense, many-flowered, 2-3.5 cm. broad, the flowers short-pedicellate; staminate perianth yellowish green, 3-4 mm. broad, puberulent; stamens usually 8, twice as long as the perianth; anthocarp woody, 1-2 cm. long, densely tomentulose.

Venezuela: La Trinidad de Maracay, Aragua, 440 m., *Pittier 5851* (W). Valencia, *Rose 21837* (W). Lara, *Saer 156* (W).—Colombia: Region of Santa Marta, *H. H. Smith 395* (F, W).—Ecuador: Guayaquil, *Stevens 39* (W). Durán, *Rose & Rose 23611* (W). Near Guayaquil, in woods, *Mille 206* (W). Daule, *André K829* (F). El Recreo, *Eggers 15332* (F). Also in Cuba, Central America, and southern Mexico.

Known in Salvador by the names “espuela del diablo” and “guaco.”

3. *Pisonia aculeata* L. Sp. Pl. 1026. 1753.

A shrub or a small tree, densely branched, sometimes with a thick trunk, the branches often very long and scandent, or more frequently pendent, armed with numerous stout recurved spines; leaves petiolate, the blades elliptic to ovate or even rounded, mostly 4–8 cm. long, acute to rounded at the base, acute or acuminate at the apex, glabrate beneath or frequently puberulent or short-villous; staminate cymes pedunculate, loosely or densely cymose, 2–6 cm. broad, many-flowered; staminate perianth 2–4 mm. long, yellowish green, densely puberulent or tomentulose; stamens usually 6, twice as long as the perianth; anthocarp 9–12 mm. long, puberulent or glabrate.

Colombia: Region of Santa Marta, 45 m., *H. H. Smith 1861* (F, W). Ranging through the West Indies to Florida, and in Central America and Mexico; occurring also in the Old World tropics.

The species has been reported from Venezuela, but the reports probably relate to *P. macranthocarpa*, which is closely related but quite distinct. It is common in Central America at low elevations, often growing in thickets near the seashore. In Central America it is known by the names “espino negro” and “cagalero,” and in Mexico and Cuba as “uña de gato.”

5. *PISONIELLA* (Heimerl) Standl.

Erect shrubs, dichotomously much branched; leaves opposite, petiolate, entire; flowers perfect, in headlike, pedunculate, axillary and terminal, many-flowered umbels, pedicellate, each pedicel subtended by a minute bract; perianth tubular-campanulate, slightly constricted at the middle, the limb shallowly 5-lobate, the lobes rounded or subtruncate; stamens 6–11, the filaments exserted; anthocarp oblong-clavate, slightly curved, coriaceous, obtuse at the apex, attenuate below, 5-costate, the angles bearing numerous verruciform glands.

The genus consists of a single species.

1. *Pisoniella arborescens* (Lag. & Rodr.) Standl. Contr. U. S. Nat. Herb. 13: 385. 1911. *Boerhaavia arborescens* Lag. & Rodr. Anal. Cienc. Nat. 4: 257. 1801. *Pisonia hirtella* HBK. Nov. Gen.

& Sp. 2: 217. 1818. *Pisonia arborescens* Kuntze, Rev. Gen. 3²: 265. 1898.

The species grows in central and southern Mexico. In South America it is represented by the following variety:

1a. *Pisoniella arborescens* (Lag. & Rodr.) Standl., var. *glabrata* Heimerl, Ann. Cons. Jard. Bot. Genève 14: 231. 1914. *Pisonia hirtella* f. *glabrata* Heimerl, op. cit. 5: 196. 1901. *Pisoniella glabrata* Standl. Contr. U. S. Nat. Herb. 13: 386. 1911.

A slender shrub, densely branched, the young branchlets ferruginous-tomentulose, soon glabrate; leaves on short slender petioles, the blades thin, ovate to oblong-elliptic, mostly 3.5–8 cm. long, acute to attenuate at the base, abruptly acute to very long-attenuate at the apex, glabrous or nearly so; peduncles 2–10 cm. long, the umbels dense, many-flowered, 12–15 mm. in diameter, the flowers short-pedicellate; perianth greenish white, 5–7 mm. long, sparsely and minutely viscid-puberulent; anthocarp 1 cm. long and 1.5–2 mm. thick, dark brown, glabrous.

Bolivia: Valle de Cochabamba, 2,600 m., *Steinbach* 8728 (F). Sorata, 2,400 m., *Rusby* 2500 (F, W, type collection; cited erroneously as "2510" in the original publication). Cochabamba, *Bang* 1063 (F, W). Without locality, *Bang* 1809 (F, W). Cochabamba, 3,000 m., March, 1892, *Kuntze* (F).—Argentina: El Rastrojo, Prov. Catamarca, 1,600 m., *Jörgensen* 1240 (W). Siambón, Sierra de Tucumán, *Lorentz & Hieronymus* 776 (F).

The variety is isolated by a great distance from the area occupied by the typical form of the species, in Mexico, but the differences between the type and the variety are so slight that they would scarcely deserve attention if both forms occupied the same area.

6. SALPIANTHUS Humb. & Bonpl.

Large herbs or small shrubs, pubescent and usually viscid; leaves alternate, petiolate, the blades broad, entire; flowers perfect, not involucrate, ebracteate, very small, glomerate or racemose, forming terminal and axillary, panicked cymes; perianth campanulate, urceolate, tubular, or pyriform, green or reddish, persistent, scarcely accrescent, the limb with 4–5 teeth or lobes; stamens 3–5; fruit subglobose, sometimes somewhat compressed, coriaceous, minute.

About three additional species of the genus are known from Mexico.

Leaves bright green, acute or acuminate, large; flowers in panicked cymes; perianth campanulate, with very short teeth, bearing numerous uncinat hairs. 1. *S. purpurascens*.

Leaves grayish, usually rounded at the apex, small; flowers in racemosely arranged cymes; perianth pyriform, at least in age,

with conspicuous, more or less spreading lobes, without uncinat hairs. 2. *S. pyriformis*.

1. *Salpianthus purpurascens* (Cav.) H. & A. Bot. Beechey Voy. 308. 1837. *Boldoa purpurascens* Cav. ex Lag. Gen. & Sp. Nov. 10. 1816. *B. ovatifolia* Lag. loc. cit. 1816. *Cryptocarpus globosus* HBK. Nov. Gen. & Sp. 2: 187. pl. 123. 1818. *C. paniculatus* HBK. ex Schlecht. Linnaea 26: 643. 1853.

Plants herbaceous or suffrutescent, 2 m. high or less, much branched, the branches slender, sparsely puberulent or glabrate, those of the inflorescence viscid and bearing numerous short uncinat hairs; leaves long-petiolate, the blades broadly rhombic-ovate to ovate-deltoid, 5-22 cm. long, acute or acuminate, at the base abruptly contracted and long-decurrent, finely scaberulous when young but soon glabrate; flowers sessile or subsessile; perianth 2.5-3 mm. long, green, 4-dentate; stamens 4, exserted; fruit subglobose, 1.5 mm. in diameter.

Venezuela: Near Caracas, 900-1,150 m., L. H. & E. Z. Bailey 675 (W). Maracay, Aragua, *Cornelio* 87 (W). Type of *C. paniculatus* apparently *Wagner* 289 from Maiquetía. Also in Mexico and Central America.

Heimerl reports the species from Colombia, but without citation of material to support its occurrence there.

2. *Salpianthus pyriformis* (HBK.), comb. nov. *Cryptocarpus pyriformis* HBK. Nov. Gen. & Sp. 2: 188. pl. 124. 1818. *C. cordifolius* Moric. Pl. Amér. 75. pl. 50. 1830. *C. pyriformis* var. *cordifolius* Moq. in DC. Prodr. 13²: 88. 1849.

Plants herbaceous or suffrutescent, usually more or less scandent, and 2 m. long, sometimes scandent to a height of 10 m., the branches densely viscid-puberulent; leaves on stout petioles, the blades rhombic-ovate to broadly ovate-deltoid or rounded-ovate, mostly 2.5-5 cm. long, usually cordate or deeply cordate at the base but varying to rounded, rounded or very obtuse at the apex, densely viscid-puberulent or tomentulose on both surfaces; inflorescence very leafy or naked, densely viscid-puberulent, the flowers subsessile; perianth less than 2 mm. long; stamens 4; anthocarp globose, blackish, 1 mm. in diameter.

Ecuador: Reported from Guayaquil, and also from Abingdon, Albemarle, Barrington, Bindloe, Charles, Chatham, Indefatigable, James, Jervis, Narborough, and Seymour Islands of the Galápagos Islands. Occurring also in Peru.

Called "nacupillo" in Peru.

By Heimerl and others this plant has been treated as the type of a distinct genus, *Cryptocarpus*. It does not seem to possess any important characters that distinguish it from *Salpianthus*, and it

is therefore preferable to treat it as a member of that genus. By Moquin this plant, as well as *S. purpurascens*, was referred to the family Chenopodiaceae. In volume 13, part 2, of De Candolle's *Prodromus*, *S. purpurascens* appears twice under different names, on page 88 in the genus *Cryptocarpus* among the Chenopodiaceae, and on pages 438 and 439 under *Boldoa*, among the Nyctaginaceae. *Cryptocarpus cordifolius* was described from Guayaquil.

7. BOUGAINVILLEA Commers.

Shrubs or small trees, often scandent, usually armed with simple or branched spines; leaves alternate, petiolate, entire; flowers perfect, either solitary and subtended by 3 bracts, or usually in a 3-flowered axillary inflorescence consisting of 3 large, persistent, often brightly colored bracts, a flower borne on the inner surface of each bract, its pedicel confluent with the costa of the bract; perianth tubular, the limb usually shallowly 5-lobed, the tube subterete or 5-angled; stamens 5-10, somewhat unequal, connate at the base into a short cup; anthocarp fusiform, coriaceous, 5-costate.

Bracts brightly colored, purplish red or bright red, retaining the color when dried, mostly 2.5-4 cm. long.

Perianth tube glabrous. 1. *B. peruviana*.

Perianth tube variously pubescent.

Perianth tube hirsute or villous; leaves usually copiously villous.

2. *B. spectabilis*.

Perianth tube puberulent or glabrate; leaves glabrate.

3. *B. glabra*.

Bracts green, or sometimes brightly colored when fresh but losing their color when dried, usually smaller, and only 1-2.5 cm. long.

Perianth only 6.5-7 mm. long, gradually dilated from base to apex, glabrate, or hirtous above; bracts 7-12 mm. long.

4. *B. campanulata*.

Perianth 9-20 mm. long, constricted above; bracts 13-27 mm. long.

Perianth glabrous, 11-14 mm. long; bracts 25-27 mm. long, 13-15 mm. wide, glabrous except on the costa.

5. *B. berberidifolia*.

Perianth variously pubescent; bracts 13-22 mm. long.

Perianth 9-11 mm. long, densely tomentulose. . 6. *B. praecox*.

Perianth 12-20 mm. long.

Perianth puberulent. 7. *B. stipitata*.

Perianth pubescent or hirsute. 8. *B. infesta*.

1. **Bougainvillea peruviana** H. & B. Pl. Aequin. 1: 174. pl. 49. 1808. *Tricycla peruviana* Poir. Encycl. Suppl. 5: 359. 1817.

A shrub 3–7 m. high, erect or scandent, armed with numerous slender spines 1–2.5 cm. long, the branches sparsely puberulent or glabrate; leaves thin, slender-petiolate, the blades broadly ovate to suborbicular, 5–7 cm. long, subtruncate at the base, subobtusate or abruptly acute at the apex, except when very young glabrous or nearly so; bracts bright rose, 1.5–3.5 cm. long, obtuse or rounded at the apex, glabrous except along the puberulent costa; perianth 16–20 mm. long, white or whitish, the limb 5–6 mm. broad; stamens usually 6; anthocarp about 10 mm. long and 2.5 mm. thick, glabrous.

Colombia: Gigante, Dept. Huila, in 1920, *Bro. Ariste-Joseph* (W). —Ecuador: Without locality, *Townsend* 837 (W). Without locality (perhaps from Colombia), *Lehmann* B. T. 446 (F). Naranjo, *André* K.708 (F). Also in Peru.

Townsend reports the vernacular name as “papelillo.” This species is closely related to *B. glabra*, but the dried specimens, when compared with others of that species, have a plainly different aspect.

2. **Bougainvillea spectabilis** Willd. Sp. Pl. 2: 348. 1789.

A large woody vine, armed with numerous stout spines 4 cm. long or shorter, the branches copiously fulvous-villous, rarely glabrate; leaf blades broadly ovate to suborbicular or rounded-oval, 5–10 cm. long, rounded to acutish at the base and often short-decurrent, abruptly acute or acuminate at the apex, usually densely villous beneath; bracts purplish red, ovate-oval or broadly ovate, 2–4.5 cm. long, subcordate at the base, abruptly acute or acuminate or sometimes obtuse at the apex, sparsely puberulent or short-villous; perianth 15–30 mm. long, the tube green, the limb 6–7 mm. wide, yellowish; anthocarp 11–14 mm. long, densely short-villous.

Bolivia: Unduavi (doubtless cultivated), *Bro. Julio* 358 (W). Native of Brazil.

This Brazilian plant is cultivated for ornament in many parts of the tropics, but in most regions it is far less common than *B. glabra*. From Argentina there are reported the vernacular names “Santa Rita” and “Tres Marías.”

3. **Bougainvillea glabra** Choisy in DC. Prodr. 13^o: 437. 1849. *B. spectabilis* var. *glabra* Hook. in Curtis's Bot. Mag. pl. 4810. 1854.

A large woody vine, armed with numerous stout spines, the branchlets puberulent when young but soon glabrate; leaf blades broadly ovate to ovate-lanceolate, 4–10 cm. long, rounded to acute at the base, abruptly or gradually acute to acuminate at the apex, puberulent when young but quickly glabrate; bracts commonly purplish red, broadly ovate to oval, subcordate at the base, commonly abruptly acute or acuminate at the apex, sparsely puberulent or

glabrous; perianth 15–25 mm. long; stamens 8; anthocarp turbinate, 7–13 mm. long, with 5 acute angles.

Venezuela: El Valle, Margarita Island, *Miller & Johnston 99* (F, W).—Colombia: Medellín, Dept. Antioquía, *Archer 763* (F). Barranquilla, *Bro. Paul 34* (W). Cartagena, *Bro. Heriberto 153* (W). La Esperanza, Dept. Cundinamarca, *Bro. Ariste-Joseph* (W). Between El Colegio and Tequendama, Cundinamarca, *Bro. Ariste-Joseph 1069* (W).—Ecuador: Guayaquil, *Mille 16* (W). Native of Brazil.

This is the common *Bougainvillea* of cultivation, that is grown for ornament in most tropical regions, often in such abundance that one becomes excessively bored with its continued display. In Ecuador and Colombia the vine is called “flor de verano”—summer flower—because it blooms during the dry months, the “summer” of tropical America, although the winter months of the north. The name “trinitaria” also is used for the plant in Colombia, and from Argentina there are reported the names “Santa Rita” and “Tres Marías.”

The species is not too distinct from *B. spectabilis*, although probably it has as good characters as most other members of the genus. It might be preferable to treat it as a variety of that species, as was done by Hooker.

4. *Bougainvillea campanulata* Heimerl, Med. Rijks Herb. 19: 33. 1913.

A shrub or small tree, unarmed, the branchlets glabrous or when young minutely tomentulose; leaves short-petiolate, elliptic-lanceolate or narrowly oblong-elliptic, 2 cm. long and 12 mm. wide or smaller, broadest at the middle, obtuse at the apex, acute at the base, minutely hirtellous beneath along the costa, otherwise glabrous; bracts elliptic to obovate-elliptic, 7–12 mm. long, 4–6.5 mm. wide, subobtuse to rounded at the apex, yellowish green, sparsely puberulent or villosulous; perianth 6.5–7 mm. long, yellow, hirtous above, the limb 9–10 mm. broad; stamens 7–8.

Bolivia: Yuquirenda, left bank of the Río Pilcomayo, 400 m., *Herzog 1124*, type. Comarapa, Dept. Santa Cruz, 2,000 m., *Steinbach 8579* (F). Without locality, *Herzog 1137* (photo. ex herb. Berol.). Villamontes, *Pflanz 696* (fragm. ex herb. Berol.).—Argentina: Balcoyna, Dept. del Alto, 1,250 m., *Venturi 7240* (F). Reported from the departments of Formosa, Tucumán, and Jujuy.

The vernacular name is reported from Argentina as “coronillo.”

5. *Bougainvillea berberidifolia* Heimerl, Denkschr. Akad. Wiss. Wien 70: 121. pl. 1, f. 2–3. 1900.

A spiny shrub, the spines mostly 1–2 cm. long, the branchlets sparsely tomentulose when young, soon glabrate; leaf blades elliptic to obovate-elliptic, broadest at or above the middle, 1.5–2.5 cm.

long, rounded or obtuse at the apex, attenuate to the base, glabrate; bracts bright rose, but turning greenish when dried, ovate-oblong, 25–27 mm. long, 13–15 mm. wide, subobtuse, sometimes suborbicular and broadly rounded at the apex, glabrous except along the costa; perianth 11–14 mm. long, yellowish or red, glabrous, the limb 4–5 mm. broad; stamens usually 5.

Bolivia: Type collected by Cuming, without locality; Heimerl reports also a specimen collected by Bridges, without number, and *Orbigny* 517, from Valle Grande. In spiny thickets of Pulquina and Comarapa, 1,900 m., *Herzog* 1799 (photo. ex herb. Berol.).

6. *Bougainvillea praecox* Griseb. Symb. Fl. Argent. 40. 1879. *B. praecox* var. *spinosa* Chod. & Hassl. Bull. Herb. Boiss. II. 3: 415. 1903. *B. praecox* var. *rhombifolia* Heimerl, Verh. Zool. Bot. Ges. Wien 62: 4. 1912. *B. modesta* Heimerl, Denkschr. Akad. Wiss. Wien 70: 118. pl. 1, f. 4. 1900.

A shrub or tree, sparsely spiny or unarmed, the spines mostly 5 mm. long or less, the branchlets tomentulose or soon glabrate; leaf blades ovate to elliptic or ovate-elliptic, 8 cm. long and 4 cm. wide or smaller, narrowed to an obtuse apex, acute or attenuate at the base, appressed-tomentose beneath at first but later glabrate; bracts white or reddish, becoming greenish when dried, broadly ovate, about 14 mm. long and 12 mm. wide, rounded or subcordate at the base, rounded or very obtuse at the apex, densely puberulent, especially on the veins; perianth 9–11 mm. long, densely tomentulose, the limb 4 mm. broad; stamens 5–6.

Bolivia: Piragwald, Dept. Santa Cruz, 400 m., *Steinbach* 8122 (F). Near Coroico, *Bang* 2398 (F, W; type collection of *B. modesta*). Huachi, head of Beni River, 540 m., *White* 973 (F, W). Heimerl reports also the following collections: Between Ipawassu and Fortín d'Orbigny, *Herzog* 1076, 1073 (var. *rhombifolia*). Left bank of Río Pilcomayo, *Herzog* 1106 (var. *spinosa*).

The species occurs also in Argentina and Paraguay. The vernacular name "duraznillo" is reported from Argentina. The two varieties described by Heimerl are minor forms scarcely worthy of nomenclatorial recognition, especially in a group in which the individual variations are so great. Heimerl suggested the possibility of combining *B. praecox* and *B. modesta*, and to the present writer there do not appear to be good grounds for separating them. The same might be said also of most of the other species listed here, for the differences between them certainly are for the most part rather inconsequential ones. *B. modesta* is described as a tree 25 m. high, but the description is probably erroneous in ascribing such a height to the tree.

7. *Bougainvillea stipitata* Griseb. Symb. Argent. 39. 1879. *B. longispinosa* Rusby, Mem. Torrey Club 6: 109. 1896. *B. stipitata* var. *longispinosa* Heimerl, Denkschr. Akad. Wiss. Wien 70: 116.

1900. *B. stipitata* var. *Kuntzeana* Heimerl, op. cit. 117. 1900. *B. stipitata* var. *Fiebrigii* Heimerl, Bot. Jahrb. Engl. 42: 76. 1908.

A shrub or small tree, unarmed or armed with stout or slender spines 2.5 cm. long or less, the young branches puberulent or tomentulose; leaves petiolate, the blades ovate, rhombic, deltoid-ovate, or rarely lanceolate, usually acuminate but sometimes obtuse, at the base rounded to acute, often decurrent, puberulent or glabrous, 3.5–7.5 cm. long; bracts green or tinged with rose, greenish when dried, broadly ovate or ovate-elliptic, 14–20 mm. long, 12–15 mm. wide, subtruncate to shallowly cordate at the base, obtuse or acutish at the apex, sparsely or rather densely puberulent; perianth 13–20 mm. long, greenish, puberulent or rarely glabrous; stamens 7–8; anthocarp fusiform, 12–15 mm. long, minutely puberulent or glabrous.

Bolivia: Region of Cochabamba, *Bang* 1123 (F, W, type collection of *B. longispinosa*). Tunari, 1,500 m., April, 1892, *Kuntze* (F, type collection of var. *Kuntzeana*). Bermejo, 1,400 m., *Fiebrig* 2352 (F). Chiquiacá, 1,000 m., *Fiebrig* 2689 (F). Tatarenda, Gran Chaco, *Fries* 1478 (W). Chinchilla apud Paicho a Tarija occidentem versus in declivibus rupestribus, 3,000 m., *Fiebrig* 3049 (F, type collection of var. *Fiebrigii*). Reported by Heimerl from the following stations: Villa Montes on the Río Pilcomayo, 460 m., *Herzog* 1137. Between Cumbarute and Itatique, 800 m., *Herzog* 1181. Samaipata, 1,650 m., *Herzog* 1724. Quebrada de las Pavas, 1,900 m., *Herzog* 1834.—Argentina: Ascochinga, Sierra de Córdoba, *Lorentz* 374 (F, photo. and fragm. of type ex herb. Berol.). Prov. Córdoba, *Lossen* 90 (F). Reported from many localities in Argentina, and also in Matto Grosso, Brazil.

The varieties listed in the synonymy are of minor importance, and scarcely worthy of nomenclatorial distinction. From Argentina the following vernacular names are reported for the species: "Tala falso," "guancar blanco," "alfiler," "alfilerillo," "coronillo blanco."

8. *Bougainvillea infesta* Griseb. Symb. Argent. 40. 1879.

A shrub about 2 m. high, unarmed or furnished with stout spreading spines 5–15 mm. long, the young branchlets densely pubescent, the older ones glabrate; leaves petiolate, elliptic to ovate or elliptic-lanceolate, mostly 2–4 cm. long, broadest at or below the middle, obtuse to acute, truncate to acute at the base, densely puberulent or tomentulose beneath; bracts greenish, about 2 cm. long and 11–13 mm. wide, rounded or subcordate at the base, very obtuse or rounded at the apex, densely pubescent; perianth 12–14 mm. long, densely pubescent or hirsute, the limb 5 mm. wide; stamens 5.

Bolivia: Villamontes, *Pflanz* 2134 (F, W). Espía, head of Bopi River, 1,050 m., *Rusby* 139 (W). The following collection is reported by Heimerl: Dry forest between Embarcación and Miraflores, *Herzog* 1043.—Argentina: Orán, *Lorentz & Hieronymus* 415 (F, photo. of type ex herb. Berol.). Sierra de Calitegua, Dept. Ledesma,

750 m., *Venturi 5404* (F). Reported also from various other localities in Argentina.

Herzog gives the vernacular name as "palo mataco."

Bougainvillea Herzogiana Heimerl, Med. Rijks Herb. 27: 12. 1915.

The species was based on a sterile specimen from Monte Grande near Fortín Guarayus, Bolivia, *Herzog 127*. It is said to be closely related to *B. infesta*, but since it is based upon leaf characters alone, the status of the plant must remain uncertain until complete material has been collected.

8. COLIGNONIA Endl.

Plants often scandent, weak, shrubby or wholly herbaceous, sometimes with tuberous roots; leaves opposite or whorled, slender-petioled, broad, entire, those of the inflorescence often wholly or partly white; flowers very small, perfect, neither involucre nor bracteate, umbellate; perianth minute, campanulate or funnelform, 3-5-parted, the tube 3-5-angled; stamens usually 5, the anthers didymous; style filiform, exserted; anthocarp ellipsoid to fusiform or obpyramidal, sometimes almost orbicular, with 3-5 wings or angles.

The genus consists of 10 species, confined to the Andean region of South America and Panama. The species not listed here are natives of Peru.

Perianth normally 5-parted; fruit 5-angled, not winged; leaves marked beneath with numerous raphids.

Perianth slender-stipitate; fruit fusiform 1. *C. parviflora*.

Perianth not conspicuously stipitate; fruit broadly pyriform or almost globose 2. *C. glomerata*.

Perianth usually 3-parted; fruit with normally 3 wings; leaves without conspicuous raphids.

Leaves densely rufous-tomentose beneath 3. *C. rufopilosa*.

Leaves glabrous or nearly so beneath.

Leaf blades oblong-ovate to lance-ovate, narrowed to the apex.

4. *C. scandens*.

Leaf blades mostly orbicular or nearly so, broadly rounded at the apex 5. *C. ovalifolia*.

1. **Colignonia parviflora** (HBK.) Endl. Gen. Pl. 311. 1837.
Abronia parviflora HBK. Nov. Gen. & Sp. 2: 216. pl. 128. 1818.
Tricratus parviflorus Spreng. Syst. Veg. 1: 536. 1825.

Plants chiefly herbaceous, glabrous throughout, the stems weak and often subscandent, 2–3 m. long, glabrous; leaves often verticillate, the slender petioles equaling or shorter than the blades; leaf blades rounded-ovate to almost orbicular, more or less unequal, 3–4.5 cm. long, broadly rounded at each end, the blades of the uppermost leaves often colored white; flowers white, arranged in very numerous small umbels, the pedicels 2–3 mm. long; perianth 3 mm. long, the lobes elliptic to obovate-oblong, rounded at the apex; anthocarp fusiform or fusiform-obpyramidal, 6–10 mm. long, 2.5–3 mm. wide, conspicuously 5-angled or almost winged.

Colombia: Andes of Popayán near Querchu, *Humboldt & Bonpland* (F, photo. of type ex herb. Berol.). Volcán de Cumbal, *Stübel 445* (F, fragm. ex herb. Berol.). Heimerl has reported also *Triana 995*. Azufra, *André 3254* (F).—Ecuador: La Rinconada, Prov. Carchi, 3,000 m., *Hitchcock 20943* (W). The species is recorded also from the mountains of Panama, but I doubt that the specimen is correctly labeled.

2. *Colignonia glomerata* Griseb. Goett. Abh. 19: 87. 1874. *C. glomerata* var. *typica* Heimerl, Denkschr. Akad. Wiss. Wien 70: 135. 1900. *C. glomerata* var. *boliviana* Heimerl, op. cit. 136. 1900.

Plants large and branched, herbaceous, often 2.5 m. high, nearly or quite glabrous, the coarse stems hollow; leaves very unequal, the petioles nearly as long as the blades; leaf blades varying from broadly ovate to ovate-deltoid, or the upper ones lance-ovate and often white, acutish to rounded at the apex, mostly 5–10 cm. long, thin, paler beneath; umbels about 8–12-flowered, long-pedunculate, the pedicels in anthesis 1–2 mm. long; perianth 2–3 mm. long, glabrous; anthocarp globose-turbinate to almost pyriform, 3–4 mm. long, 2–2.5 mm. wide, attenuate toward the base.

Argentina: Ciénaga, *Lorentz & Hieronymus 725* (F, photo. ex herb. Berol.). Siambon, *Lorentz & Hieronymus 894* (F, photo. ex herb. Berol.). Reported by Heimerl also from "Alisowäldern der Cuesta de Anfama in der Nähe der Ciénaga," *Lorentz 313, 754*.—Bolivia: Tunari, May, 1892, *Kuntze* (F). Yungas, *Bang 699* (F, W). Without locality, *Bang 1772* (F, W). Sorata, 3,000 m., *Rusby 2705* (F, W); in wet places, *Holway 523* (W). Heimerl reports also *Mandon 1007*.

Var. *boliviana* Heimerl was based upon *Bang 699* and several other collections. To the present writer it does not appear to be sufficiently distinct from the typical form to deserve the distinction of a varietal name.

3. *Colignonia rufopilosa* Kuntze, Rev. Gen. 3²: 264. 1898; Heimerl, Denkschr. Akad. Wiss. Wien 70: 132. 1900.

Plants herbaceous or suffrutescent, 1–3 m. long, usually sprawling or clambering, the stout branches densely ferruginous-tomentose; leaves chiefly opposite, those of a pair subequal, those of the inflores-

cence often white, the slender petioles shorter than the blades; leaf blades ovate or ovate-elliptic, 3–8 cm. long, narrowed to an obtuse apex, or the uppermost leaves often acute, green and sparsely tomentulose above, paler beneath and densely rufous-tomentose; umbels numerous, 10–25-flowered, the pedicels glabrous or nearly so, capillary, 2–4 mm. long, or in fruit up to 5 mm. long; perianth white, 2.5–3 mm. long, glabrous; anthocarp glabrous, suborbicular, 5 mm. long and broad, rounded at the base, 3-winged.

Ecuador: Huigra, *Rose & Rose 22519* (W). Reported by Heimerl from the Andes of Quito, *Jameson 695*.—Bolivia: Río Juntas, 1,000–2,000 m., April, 1892, *Kuntze* (F, photo. of type ex herb. Berol.; W, type collection). Yungas de San Mateo, 2,800 m., *Steinbach 8490* (F). Yungas, *Bang 710* (F, W). Unduavi, 2,400 m., *Rusby 2706* (F, W); 3,200 m., *Buchtien 4736* (W); 3,100 m., *Buchtien 2993* (W). San Felipe, Sur Yungas, *Holway 612* (W). Heimerl reports also collections by Cuming and Bridges, without special locality. The species occurs in Peru.

Of all the species of the genus, this is the best-marked and the most easily recognized.

4. *Colignonia scandens* Benth. Pl. Hartw. 148. 1844.

Plants herbaceous or suffrutescent, erect or subscandent, the stems 1–2 m. long, glabrous or nearly so; leaves often subverticillate, the small ones of the inflorescence frequently white, those of a pair subequal, the petioles usually shorter than the blades but sometimes equaling them; leaf blades elliptic to rhombic-ovate or oblong-ovate, 2–6 cm. long, rounded or very obtuse at the apex, sometimes acute at the base, sparsely ferruginous-puberulent beneath along the veins when young, in age glabrous or nearly so; umbels commonly 8–12-flowered, the pedicels glabrous, filiform, 3–4 mm. long, or in age as much as 6 mm.; perianth green or greenish, 2.5–3 mm. long, glabrous, the lobes obovate-elliptic, obtuse or rounded at the apex; anthocarp suborbicular, 4–5 mm. long and broad, glabrous, rounded at the base, 3-winged.

Ecuador: Type from the mountains of Loja, *Hartweg 828*. Between San Lucas and Oña, Prov. Loja, 2,200–3,100 m., *Hitchcock 21558* (W). Loja, December 1, 1876, *André 4554* (F). Also in Peru.

5. *Colignonia ovalifolia* Heimerl, Denkschr. Akad. Wiss. Wien 70: 132. 1900.

Plants herbaceous or suffrutescent, erect or subscandent, sometimes 3 m. long, the stems sparsely and closely ferruginous-tomentulose on the younger parts but soon glabrous or practically so; leaves opposite or subverticillate, rather small, a few of the uppermost bractlike leaves white, the very slender petioles usually equaling or often much longer than the blades; leaf blades mostly rounded-ovate or suborbicular and 2–4 cm. long, broadly rounded at the base, rounded at the apex, thin, paler beneath, when young sparsely

ferruginous-puberulent along the veins but soon glabrous or nearly so; umbels 12–16-flowered, the slender pedicels glabrous, 3–6 mm. long; perianth white, 3 mm. long, glabrous; anthocarp suborbicular, 5–6 mm. long and broad, glabrous, rounded at the base, 3–4-winged.

Colombia: Edge of forest, Rosalito, Dept. Tolima, 2,800–3,100 m., *Pennell* 2984 (F, W). Without locality, *Triana* 294 (herb. Paris). Las Escaleretas, Moras Valley, Cauca, 2,500–3,000 m., *Pittier* 1383 (F, W). Above Canaan, Mt. Puracé, El Cauca, 3,300–3,400 m., *Pennell & Killip* 6515 (W). Reported by Heimerl from Páramo de Hervé, *Goudot*.—Ecuador: Type from the Andes of Quito, *Spruce* 5130. Camino de Chillogallo a San Juan, Prov. Pichincha, 3,000 m., *Firmín* 490 (F). Locality uncertain, *Sodiño* 128–6 (F, photo. and fragm. ex herb. Berol.). Western slope of Mt. Chimborazo, 3,000–3,400 m., *Rimbach* 4 (F).

9. ALLIONIA L.

Prostrate annual or perennial herbs; leaves opposite, petiolate, those of a pair unequal, the blades entire or sinuate; flowers perfect, in axillary clusters of 3, each subtended by a broad green bract, the bracts cucullate, enclosing the fruit; perianth corolla-like, constricted above the ovary, the limb oblique, 4–5-lobed; stamens 4–7, the filaments unequal, exserted; anthocarp coriaceous, obovoid or oval, strongly compressed, 3-costate or cristate on the inner surface, the outer surface bearing 2 parallel longitudinal rows of stipitate glands, the thin margins dentate or entire, inflexed.

The genus is represented in South America by a single variable species. Two other species described from Mexico and the United States may be distinct, for they are separated on characters which, for the Nyctaginaceae, are fairly constant.

1. *Allionia incarnata* L. Syst. Nat. ed. 10. 890. 1759. *A. mendocina* Phil. Sert. Mendoc. Alt. 41. 1870. *Wedelia incarnata* Kuntze, Rev. Gen. 533. 1891. *A. puberula* Phil. Anal. Mus. Nac. Chile Bot. 1891: 71. 1891. *A. Jarae* Phil. op. cit. 72. 1891. *A. Bandurriæ* Phil. Anal. Univ. Chile 41: 274. 1895. *Wedeliella incarnata* Cockerell, Torreya 9: 167. 1909.

Perennial from a slender or thick, woody root, the stems short or elongate, glandular-puberulent or viscid-villous; leaves on petioles 5–20 mm. long, the blades oval to deltoid-orbicular or oblong, 1–6 cm. long, subcordate or rounded and unequal at the base, rounded to acute at the apex, paler beneath, glandular-puberulent or viscid-villous; involucre numerous, on slender peduncles 5 cm. long or less; bracts obovate-orbicular, 5–8 mm. long, rounded or obtuse at the apex; perianth 7–15 mm. long, purple-red or rarely white; anthocarp 3–4.5 mm. long, pale brown or olive, the inner side 3-costate, the margins with 3–5 low broad teeth, or the teeth more numerous and slender, the margins rarely entire.

Venezuela: Type from Cumaná. Savannas of Lagunillas, Mérida, 1,000 m., *Jahn 664* (W). Barquisimeto, in the cactus formation, 600 m., *Pittier 6391* (W).—Bolivia: Bolivian Plateau, *Bang 928* (F, W). Río Tapacani, 3,000 m., March 19, 1892, *Kuntze* (F). Tarija, frequent in dry sandy places, *Fries 1130* (W).—Argentina: Pampas, January, 1892, *Kuntze* (F). Prov. Córdoba, *Lossen 175* (F).—Chile: Desert of Atacama, *Morong 1102* (F). Parca, Cordillera Quebrada de Quipisca, Prov. Tarapacá, 2,500 m., *Werdermann 1056* (F). Tarapacá, *Philippi* (F, photo. of type material of *A. Jarae*, ex herb. Berol.). Prov. Atacama, *Philippi* (F, photo. of type material of *A. Bandurriæ*, ex herb. Berol.). Atacama, *Philippi* (F, photo. of type material of *A. puberula*, ex herb. Berol.). The species ranges in the drier regions northward to the southwestern United States.

The forms referred here are variable as to amount and quality of pubescence and toothing of the anthocarp wings, but it seems quite impractical to separate them into recognizable forms or varieties.

10. BOERHAAVIA L.

Annual or perennial herbs, sometimes somewhat frutescent and subscandent, the stems often with viscous areas in the internodes; leaves opposite, often unequal, petioled, the blades entire or sinuate; flowers perfect, small, variously arranged, bracteate, the bracts usually very small; perianth corolla-like, campanulate, nearly rotate, or funnelform, the limb shallowly 5-lobate; stamens 1–5, exserted or included, unequal; anthocarp cylindric to obovoid or obpyramidal, terete or 3–10-angulate, sometimes 3–5-winged, glabrous or pubescent, sometimes furnished with stipitate glands.

Fruit terete or 10-ribbed, with stipitate glands near the apex; plants large and often subscandent; perianth funnelform.

Perianth purple or purplish, 8–10 mm. long; anthocarp 6.5 mm. long and 2 mm. thick; stamens 3. 1. *B. tuberosa*.

Perianth greenish yellow, 5–8 mm. long; anthocarp 7–13 mm. long and 1.5–2 mm. thick; stamens 2. 2. *B. scandens*.

Fruit 3–5-angled or 3–5-winged, without stipitate glands; plants usually low, erect or procumbent; perianth campanulate to almost rotate.

Flowers in cymes; anthocarp truncate at the apex, glabrous; perianth white or pink; plants annual. 3. *B. erecta*.

Flowers in heads or glomerules; anthocarp not truncate at the apex, often pubescent; perianth usually dark red; plants perennial.

Branches of the inflorescence glabrous; flowers mostly in clusters of 2–4. 4. *B. coccinea*.

Branches of the inflorescence puberulent or glandular-puberulent; flowers chiefly in many-flowered heads. 5. *B. caribaea*.

1. *Boerhaavia tuberosa* Lam. Ill. Gen. 1: 10. 1791. *B. excelsa* Willd. Phytogr. 1. 1794. *B. scandens* Choisy in DC. Prodr. 13: 454. 1849, in part, not L. *B. litoralis* HBK. Nov. Gen. & Sp. 2: 216. 1818. *Commicarpus tuberosus* Standl. Contr. U. S. Nat. Herb. 18: 101. 1916.

Plants much branched, suberect or scandent, sometimes 2 m. long, glabrous except at the nodes, pale; leaves thick and fleshy, long-petiolate, the blades broadly ovate or deltoid-ovate, 3.5–5.5 cm. long, acutish to short-acuminate, often subcordate at the base, glabrous or nearly so; flowers umbellate, the umbels numerous, 4–7-flowered, the pedicels long and slender but stiff; perianth glabrous or sparsely hirtulous above; stamens exserted; anthocarp linear-clavate, truncate at the apex, bearing about 5 glands below the apex.

Ecuador: James Bay, Galápagos Islands, *Stewart 1447* (W); common in open woods at 255 m. Albemarle Island, abundant in open places on the lower parts of the island, *Stewart 1442* (W). Reported also from Charles, Indefatigable, and Chatham Islands. Occurring in Peru.

This species as well as *C. scandens* belongs to a peculiar group of the genus for which the writer has proposed generic rank, under the name *Commicarpus*. The writer is still of the belief that the genus is quite as good a one as are most of those segregated in the family, but is willing to suppress it in order to aid in reducing, to as great an extent as possible, the increasing number of genera. The genus certainly is quite as good a one as *Pisoniella*.

2. *Boerhaavia scandens* L. Sp. Pl. 3. 1753. *Commicarpus scandens* Standl. Contr. U. S. Nat. Herb. 12: 373. 1909.

Plants large and usually clambering over other plants, suffrutescent near the base, the branches pale, glabrous, obscurely puberulent about the nodes; leaves thick and fleshy, on petioles 1–2 cm. long, the blades broadly cordate-ovate to ovate-deltoid, 1.5–6.5 cm. long, deeply cordate to truncate at the base, acute or obtuse at the apex, slightly paler beneath, glabrous or when young obscurely puberulent; flowers umbellate, the slender pedicels 5–10 mm. long, glabrous; perianth glabrous or rarely puberulent; stamens exserted; anthocarp glabrous, bearing few or numerous glands irregularly disposed along the costae.

Colombia: Region of Santa Marta, near sea level, *H. H. Smith 571* (F, W).—Venezuela: Between Estanques and Puente Real, Mérida, 500 m., *Pittier 12839* (W). Sabanas de Lagunillas, Mérida, 1,000 m., *Jahn 663* (W). Ranging northward to the southern borders of the United States, and widely dispersed in the West Indies.

The plant is said to be called “pegapega” in Curaçao.

3. *Boerhaavia erecta* L. Sp. Pl. 3. 1753. *B. virgata* HBK. Nov. Gen. & Sp. 2: 215. 1817. *B. discolor* HBK. loc. cit.

Plants annual, erect or decumbent, 1 m. high or less, usually much branched at the base, the slender branches finely puberulent below, the middle internodes often with brown viscous bands, the upper ones glabrous or minutely puberulent; leaves slender-petiolate, the blades broadly ovate-rhombic or deltoid-ovate, varying to oval or oblong, 2-6 cm. long, truncate to rounded at the base, broadly rounded to obtuse or rarely acute at the apex, pale beneath and usually brown-punctate, glabrous or sparsely puberulent; flowers on pedicels 1-5 mm. long; perianth 1-1.5 mm. long, glabrous, sometimes glandular-punctate; stamens 2-3, exserted; anthocarp narrowly obpyramidal, 3-3.5 mm. long, 1-1.5 mm. wide, glabrous, 5-angled.

Venezuela: El Valle, Margarita Island, *Miller & Johnston* 204 (F, W). Between Caracas and La Guaira, *Rose* 21642 (W). Near La Guaira, *Otto* 449 (W).—Colombia: Region of Santa Marta, 30 m., *H. H. Smith* 1321 (F, W). Barranquilla, *Bro. Paul B-33* (W), *C-39* (W). In fields, Sevilla, Dept. Magdalena, *Salt S* (W). Hacienda de Coloncito, near Turbaco, Dept. Bolívar, *Killip & Smith* 14378 (W). Cartagena, *Bro. Heriberto* 408 (W). Girardot, Dept. Cundinamarca, 350-400 m., *Rusby & Pennell* 84 (W).—Ecuador: Charles Island, Galápagos Islands, common to 180 m., *Stewart* 1439 (F, W). Narborough Island, Galápagos, occasional in lava crevices, *Stewart* 1441 (W). Tagus Cove, Albemarle Island, Galápagos, common in open sunny places in tufaceous soil on the lower parts, *Stewart* 1440 (F, W). Distributed as a weed through most of tropical America, and extending to the southern United States.

The plant is one of the most abundant weeds of many parts of tropical America. *Boerhaavia virgata* was described from Quetepe and Cumaná, Venezuela, and *B. discolor* from Guayaquil, Ecuador.

4. ***Boerhaavia coccinea*** Mill. Gard. Dict. ed. 8. *Boerhaavia* No. 4. 1768. *B. paniculata* Rich. Act. Soc. Hist. Nat. Par. 1: 105. 1792. *B. adscendens* Willd. Sp. Pl. 1: 19. 1797. *B. decumbens* Vahl, Enum. Pl. 1: 284. 1804. *B. diffusa* var. *laxa* Kuntze, Rev. Gen. 533. 1891.

Plants perennial from an often fusiform, fleshy root, the stems few or numerous, ascending or procumbent, 1 m. long or less, minutely puberulent below or often sparsely villous, especially at the nodes, glabrous above; leaves petioled, somewhat fleshy, the blades rhombic-orbicular to rhombic-ovate or oval, 2-5.5 cm. long, subcordate to broadly rounded at the base, rounded or obtuse at the apex, pale beneath, not punctate, glabrous or obscurely puberulent, rarely villous along the veins; flowers subsessile in glomerules of 2-4 at the ends of filiform glabrous peduncles 3-10 mm. long; perianth 2 mm. broad, minutely glandular-puberulent; stamens 2, short-exserted; anthocarp narrowly obovoid, 3-4 mm. long, rounded at the apex, densely glandular-puberulent or glandular-pilose, 5-sulcate.

French Guiana: Without locality, *Mélinon* (F).—Surinam: Groningen, May 10, 1916, *Samuels* 122 (F).—British Guiana:

Georgetown, sandy places, roadside, *Persaud* 163 (F).—Venezuela: Ciudad Bolívar, 35 m., *Holt & Gehriger* 23 (F). El Valle, Margarita Island, *Miller & Johnston* 203 (F). La Rubiera near Calabozo, Guárico, *Grisol* 7 (W). La Guaira, *Moritz* 1143 (W). Cristóbal Colón, on hills, *Broadway* 119 (W). In savannas, Santa Rosa de la Tierra, near Maracaibo, *Pittier* 10687 (W). Barquisimeto, 400 m., *Saer* 590 (F).—Colombia: Santa Rosa to Cisneros, Dept. El Valle, on banks, 250–350 m., *Killip* 5377 (W). Region of Santa Marta, on seashore, *H. H. Smith* 1323 (F, W). Cañabetal, Dept. Bolívar, 100 m., in sand along river, *Pennell* 3876 (W). Near Bello, Antioquia, *Archer* 229 (F).—Ecuador: Caraquez Bay, *Anthony* 97 (W). Huigra, *Rose & Rose* 22626 (W).—Bolivia: Guanai to Tipuani, *Bang* 1431 (F, W). Bolivian Plateau, *Bang* 957 (F, W). Junction of rivers Beni and Madre de Dios, *Rusby* 904 (F, W). Tarija, in campo arenoso, *Fries* 1150 (W). Milluguaya, Nord-Yungas, 1,300 m., *Buchtien* 4135 (W).—Paraguay: Central Paraguay, *Morong* 93 (F). Cordillera de Altos, *Fiebrig* 247 (F). Also in Peru, and widely distributed in tropical America.

This is a common weedy plant of tropical America, but in some regions, such as Central America, it is much less frequent than *B. erecta* or *B. caribaea*.

4a. *Boerhaavia coccinea* Mill., var. *leiocarpa* (Heimerl), comb. nov. *B. paniculata* f. *leiocarpa* Heimerl, Oesterr. Bot. Zeitschr. 56: 252. 1906. *B. paniculata* var. *guaranitica* Heimerl, loc. cit. 1906. *B. Friesii* Heimerl, op. cit. 253. 1906. *B. paniculata* var. *leiocarpa* Heimerl, Ann. Cons. Jard. Genève 17: 225. 1913.

Like the species, but the anthocarp glabrous.

Colombia: Region of Santa Marta, 75 m., *H. H. Smith* 1320 (F, W).—Bolivia: Tarija, in rupibus siccis apricis, *Fries* 1206 (W, type collection). Bermejo, *Fries* 2315 (F, photo. and fragm. ex herb. Berol.).—Paraguay: Cordillera de Altos, *Fiebrig* 465 (F), 465a (F).—Uruguay: Cerrito, Dept. Montevideo, *Herter* 61A (F). Also in Peru and Argentina.

I do not find any important or essential difference between *Boerhaavia Friesii* and the forms referred by Heimerl to his varieties *leiocarpa* and *guaranitica*. They all agree in having a glabrous anthocarp, but otherwise they differ little if at all from *B. coccinea*. It may be that the lack of pubescence on the fruit is sufficient to give the form specific rank but this is purely a matter of personal opinion.

5. *Boerhaavia caribaea* Jacq. Obs. Bot. 4: 5. 1771. *B. polymorpha* Rich. Act. Soc. Hist. Nat. Par. 1: 185. 1792. *B. hirsuta* Willd. Phytog. 1: 1. 1794. *B. viscosa* Lag. & Rodr. Anal. Cienc. Nat. 4: 256. 1801. *B. glandulosa* Anderss. Svensk. Vet. Akad. Handl. 1853: 171. 1854. *B. diffusa* var. *hirsuta* Kuntze, Rev. Gen. 533. 1891. *B. diffusa* var. *viscosa* Heimerl, Beitr. Syst. Nyct. 27. 1897. *B. patula* Domb. ex Vahl, Enum. Pl. 1: 287. 1805.

Plants perennial, from a thick woody root, the stems decumbent or prostrate, below viscid-puberulent and often hirsute or villous, above densely glandular-puberulent or often merely puberulent and slightly viscid; leaves thick, petiolate, the blades suborbicular to oval or oblong, 1.5–5.5 cm. long, truncate to rounded at the base, broadly rounded or obtuse at the apex, paler beneath and sometimes brown-punctulate, glabrous or often puberulent or densely villous or hirsute; flower heads axillary or usually in open cymes, the branches of the inflorescence puberulent or glandular-puberulent, the flowers sessile or short-pedicellate; perianth purplish red, 2 mm. broad, puberulent or glandular-puberulent; stamens 1–3, short-exserted; anthocarp narrowly obovoid, 2.5–3 mm. long, 5-sulcate, densely glandular-puberulent.

Venezuela: San Pablo de Mendoza, Trujillo, in fields, *Pittier* 13311 (W). In cactus formation, Cabo Blanco, D. F., *Pittier* 10239 (W). El Sombrero, Guárico, *Pittier* 11457 (W). Macuto, L. H. & E. Z. Bailey 1204 (W). La Trinidad de Maracay, Aragua, 440 m., *Pittier* 5761 (W). La Guaira, *Moritz* 1143 (F). Hacienda El Volcán, near Santa Lucía, Miranda, *Pittier* 8248 (W). Valencia, Carabobo, in savannas, 400–800 m., *Pittier* 9029 (W).—Colombia: Dagua, El Valle, 700–900 m., *Pennell* 5643 (W). Barranquilla, *Bro. Paul* C-26 (W); *Bro. Elias* 236 (W). Río Frío, Dept. Magdalena, *Salt* F (W). Region of Santa Marta, 45 m., *H. H. Smith* 1499 (F, W). Santa Rita, *André* 4183 (W). Without locality (possibly from Ecuador), *Lehmann* 4712 (W). Cartagena, *Bro. Heriberto* 379 (W).—Ecuador: Durán, *Rose & Rose* 23605 (W). Without locality, *Eggers* 14928 (F). Milagro, Prov. Guayas, 50 m., *Hitchcock* 20208 (W). Oil camp between Guayaquil and Salinas, Prov. Guayas, *Hitchcock* 20009 (W). Caragues Bay, *Anthony & Tate* 107 (W). Daphne Island, *Wheeler, Rose & Beebe* 9 (W). North Indefatigable Island, Galápagos, *Snodgrass & Heller* 670 (W). Charles Island, Galápagos, April 8, 1888, *Lee* (W); beach to 180 m., in light tufaceous soil, *Stewart* 1452 (W). Hood Island, Galápagos, on hillsides at 75 m., *Stewart* 1456 (W).—Bolivia: Cotaña am Ilimani, 2,400 m., *Buchtien* 3169 (W). Also in Peru; generally distributed in tropical America.

This species is one of the most abundant weeds of waste and cultivated ground in the lowlands of most parts of tropical America. Through its wide range it varies greatly, at least as regards the amount and nature of the pubescence, but it seems impractical to recognize any well-defined varieties or forms.

The vernacular name "tripa de gallina" is reported from Colombia.

Boerhaavia glandulosa was described from the Galápagos Islands.

11. MIRABILIS L.

Perennial herbs, erect or procumbent, often viscid-pubescent, the branches commonly swollen at the nodes; leaves opposite, petiolate or sessile, the blades entire or undulate; flowers perfect, involucrate, the

involucre 1-several-flowered, 5-lobate, in fruit often accrescent and becoming almost rotate; perianth corolla-like, tubular to campanulate, often oblique, the limb 5-lobed, the perianth soon withering and deciduous; stamens 3-5, unequal, usually exserted; anthocarp coriaceous, smooth or 5-angled or 5-sulcate, often constricted at the base, mucilaginous when wet.

The genus as here treated includes *Oxybaphus* and several other groups that have been treated at one time or another as distinct. If only the species of North America are considered, such genera as *Oxybaphus*, *Quamoclidion*, and *Hesperonia* seem to be differentiated by good and constant characters; but, as so often happens, when extralimital species are taken into account, the characters supposed to separate the groups break down. It seems necessary, therefore, to follow Heimerl in considering all the plants of the group as representing a single genus, *Mirabilis*.

Perianth very large, 3-5.5 cm. long. 1. *M. Jalapa*.

Perianth small, less than 2 cm. long.

Anthocarp sometimes pubescent, constricted at the base, 5-angulate or 5-sulcate; involucre accrescent after anthesis.

Stems densely viscid-villous throughout; leaf blades thick, nearly all deeply cordate at the base; involucre strongly accrescent in fruit and with almost entire margin. 2. *M. viscosa*.

Stems glabrous or glabrate below; leaf blades thin, mostly truncate or only shallowly cordate at the base; involucre slightly accrescent in fruit and remaining deeply lobed.

3. *M. violacea*.

Anthocarp glabrous, not constricted at the base, terete; involucre scarcely at all accrescent after anthesis.

Leaves thin, the lower ones on long slender petioles and even the uppermost usually with conspicuous petioles, the blades mostly truncate or shallowly cordate at the base.

4. *M. prostrata*.

Leaves rather thick, the lower ones on comparatively short and thick petioles, the upper mostly sessile or nearly so, the blades mostly rounded to acute at the base. . 5. *M. expansa*.

1. **Mirabilis Jalapa** L. Sp. Pl. 177. 1753. *M. odorata* L. Cent. Pl. 1: 7. 1755. *M. dichotoma* L. Sp. Pl. ed. 2. 252. 1762.

A stout bushy-branched perennial 1 m. high or less, the branches glabrous, puberulent, or rarely short-villous; leaves slender-petiolate, the blades ovate-deltoid to lance-oblong, 5-14 cm. long, subcordate to rounded at the base, acute to acuminate at the apex, glabrous or

rarely puberulent, usually ciliate; flowers in dense clusters at the ends of the branches; involucre short-pedunculate or sessile, 7–15 mm. long, glabrous, puberulent, or short-villous, the lobes linear-lanceolate to lance-ovate, longer than the tube, acute or acuminate; perianth 3–5.5 cm. long, purplish red or white, yellow, or variegated; stamens 5; anthocarp 7–9 mm. long, 5-angled, verrucose or rugose, dark brown or black, glabrous or puberulent.

British Guiana: Kamakusa, upper Mazaruni River, *De La Cruz* 4182 (F). Hyde Park, Demerara, in 1922, *G. B. Warren* (F).—Venezuela: Caracas, *Rose* 21626 (W).—Colombia: Region of Santa Marta, 30 m., *H. H. Smith* 1324 (F).—Bolivia: Yungas, *Bang* 480 (F). Chiquiaca, 1,000 m., *Fiebrig* 2702 (F).—Paraguay: Central Paraguay, *Morong* 622 (F).—Argentina: Prov. Córdoba, *Lossen* 277 (F), 278 (F).

This species, the common four-o'clock or marvel of Peru, is well known to horticulturists, being cultivated commonly in most tropical and even in temperate regions. It is one of the plants most frequently seen in the gardens of the United States, and thrives in almost any kind of soil or under neglect. The very sweet-scented flowers open in late afternoon and close the following morning. There are endless color varieties, those in which the perianth is striped in two or more colors being especially striking.

Although the plant is doubtless a native of America, it is not known where it grew originally. At the present time it probably is not found anywhere in a truly wild state, although often it persists in waste ground about settlements, sometimes as an abundant weed. In these respects it is like numerous other American plants that are known only in a cultivated state. No doubt the four-o'clock has been in cultivation for hundreds of years, and it may well have originated in Mexico, whose inhabitants had a great love for flowers. In the older botanical works the plant is assumed to be a native of Peru, but the fact that its nearest relatives grow wild in Mexico, while none at all occur in Peru, points to its nativity in Mexico.

Among the vernacular names reported are the following: "Jazmín colorado" (Venezuela); "maravilla," "buenas tardes," "buenas noches," "Don Pedro de noche," "cuambu" (Argentina); "dengue" (Chile); "maravilha," "boa noite," "bonina," "purga de nabiça" (Brazil).

2. *Mirabilis viscosa* Cav. Icon. 1: 13. pl. 19. 1791. *Nyctago parviflora* Salisb. Prodr. 57. 1796. *Calyxhymenia viscosa* R. & P. Fl. Peruv. 1: 46. 1798. *Calymenia viscosa* Pers. Syn. Pl. 1: 36. 1805. *Vitmania viscosa* Turra ex Steud. Nom. Bot. 140, in syn. 1821. *Oxybaphus viscosus* L'Hér. ex Choisy in DC. Prodr. 13²: 430. 1849. *Allionia viscosa* Kuntze, Rev. Gen. 533. 1891.

A coarse herb, 0.5–1.5 m. high or even larger, the stems sometimes as much as 5 cm. thick, the branches densely viscid-pilose; leaves rather thick, long-petiolate, the blades broadly cordate-ovate or ovate-deltoid, 3–10 cm. long, usually cordate and abruptly short-decurrent at the base and acute to acuminate at the apex, short-villous or puberulent beneath and often also on the upper surface, the leaves of the inflorescence reduced and bractlike; inflorescence large, openly paniculate, the branches chiefly opposite, densely viscid-villous; involucre at anthesis 3–5 mm. long, in fruit 15–25 mm. broad, densely viscid-pilose; flowers solitary or rarely 2–3 in the involucre, the perianth 8–20 mm. long, purplish red, pink, or white, sparsely pilose, the limb 15–25 mm. broad; stamens 3; anthocarp obovoid, 5 mm. long, glabrous, densely covered with large coarse tubercles.

Colombia: Open limestone slopes below Dagua, Dept. El Valle, 700–900 m., *Pennell 5652* (W).—Ecuador: Huigra, *Rose & Rose 22146* (W). Also in Peru and Mexico.

3. *Mirabilis violacea* (L.) Heimerl, Beitr. Syst. Nyctag. 23. 1897. *Allionia violacea* L. Syst. Nat. ed. 10. 890. 1759. *Oxybaphus violaceus* Choisy in DC. Prodr. 13²: 432. 1849. *O. violaceus* var. *parviflorus* Choisy, loc. cit. *Allionia craterimorpha* Rusby, Descr. N. Sp. S. Amer. Pl. 15. 1920.

Plants annual or perennial, much branched from the base, the slender branches usually procumbent, bifariously puberulent or glabrate, sometimes sparsely viscid-villosulous; leaves on long slender petioles, the blades broadly ovate-deltoid, rarely elongate-deltoid, 3–11 cm. long or larger, subcordate or truncate at the base, acuminate or long-acuminate at the apex, rarely obtuse, thin, bright green, sparsely puberulent or short-pilose or glabrate; inflorescence cymose, usually dense and congested, or in age open, often leafy, the very slender branches viscid-pilose; involucre 3 mm. long in anthesis, in fruit 5–6 mm. long, green, viscid-pilose, the lobes triangular-ovate, unequal, mostly acute or acuminate; perianth purplish red, 6–8 mm. long, viscid-pilose or glabrate; stamens usually 3; anthocarp obovoid, 3.5–4 mm. long, dark brown or blackish, short-pilose, sparsely tuberculate.

Venezuela: La Victoria, *Jahn 212* (W). Lower Catuche Wood above Caracas, 1,000–1,200 m., *Pittier 7203* (W), *7127* (W). La Trinidad de Maracay, Aragua, 440 m., *Pittier 5762* (W). Between Antimano and Las Adjuntas, D. F., *Pittier 12410* (W). Los Chorro, 900 m., *Eggers 13042* (W). Hacienda de las Cuadras near Caracas, *Eggers 13007* (W). Near Caracas, 900–1,150 m., *L. H. & E. Z. Bailey 713* (W).—Colombia: Near Bonda, 45 m., *H. H. Smith 569* (F, W, type collection of *Allionia craterimorpha*). Between Suratá and California, Santander, in thicket, 1,740–2,000 m., *Killip & Smith 16795* (W). California, Santander, open hillside, 2,200 m., *Killip & Smith 16855* (W).—Ecuador: Between Huigra and Naranjapata, Prov. Chimborazo, 600–1,200 m., *Hitchcock 20650* (W). Ambato, *Pachano 74* (W). Huigra, *Rose, Pachano & Rose 23878* (W). El Recreo,

January 30, 1897, *Eggers* (F). Ranging northward to southern Mexico.

The var. *parviflorus* was based on *Moritz* 216 from Colombia. The following additional Venezuelan collections are reported by *Knuth* (Fl. Venez. 317. 1928): *Palmar*, D. F., 1,000 m., *Wagener*. *San Mateo*, D. F., 800 m., *Wagener*. *Nueva Barcelona*, *Bermúdez*, *Humboldt & Bonpland*.

4. ***Mirabilis prostrata*** (R. & P.) *Heimerl* in E. & P. Nat. Pfl. 3, Abth. 1b: 24. 1889. *Calyxhymenia prostrata* R. & P. Fl. Peruv. 1: 46. pl. 75, f. c. 1798. *Oxybaphus prostratus* Vahl, Enum. Pl. 2: 40. 1806. *O. micranthus* *Choisy* in DC. Prodr. 13: 432. 1849. *Mirabilis micrantha* *Heimerl* in E. & P. Nat. Pfl. 3, Abth. 1b: 24. 1889. *M. prostrata* var. *pubigera* *Heimerl*, Bot. Jahrb. Engl. 34: Beibl. 78: 10. 1904. *Allionia micrantha* *Molfin*, Physis 7: 51. 1923.

Plants much branched, erect or procumbent, reported to be sometimes as much as 2 m. high, the slender branches puberulent, viscid-villosulous, or often glabrate, with elongate internodes; leaves slender-petioled, thin, the uppermost short-petioled, the blades ovate or ovate-deltoid, often elongate-deltoid, mostly 3-7 cm. long, commonly truncate or subcordate at the base, acute to long-acuminate, rarely obtuse at the apex, sparsely villosulous or puberulent or more often glabrate; inflorescence cymose-paniculate, usually large and open, often leafy-bracted; involucre 4-5 mm. long, narrow, densely viscid-villosulous, the lobes narrowly triangular, mostly acute, subequal, equaling or shorter than the tube; perianth purplish red or pink, 7-10 mm. long, sparsely viscid-villosulous; stamens 3, usually exerted but sometimes included; anthocarp obovoid, 3 mm. long, glabrous, fuscous, nearly smooth.

Ecuador: *Huigra*, 1,200 m., *Hitchcock* 20312 (W); *Rose & Rose* 22407 (W), 22411 (W), 22296 (W). In sepibus interandinis prope *Riobamba*, *Mille* 19 (W). Type of *M. prostrata* var. *pubigera* from *Quito*, *Sodi* 128-1.—Bolivia: *La Paz*, *Camino a Obraj*, 3,550 m., *Buchtien* 377 (F), 140 (W). *Cotaña* am *Ilimani*, 2,450 m., *Buchtien* 3168 (F, W), 262 (F). *Cochabamba*, *March*, 1892, *Kuntze* (F); at 3,000 m., *March* 26, 1892, *Kuntze* (F). Without locality, 3,000 m., *April*, 1892, *Kuntze* (F). *Tarija*, *Fiebrig* 2436 (F, fragm. ex herb. Berol.). *Cochabamba*, *Bang* 1069 (F, W), 1070 (F, W). Near *La Paz*, 3,000 m., *Bang* 36 (W); *Claude-Joseph* 1131 (W); *Rusby* 2868 (W). Near *Yungas*, 1,200 m., *Rusby* 2688 (F, W).—Argentina: *Quebrada de Choya*, *Prov. Catamarca*, *Schickendantz* (F, photo. and fragm. ex herb. Berol.).—Chile: *Valparaíso*, *Stewart* (F). Also in Peru.

The species was described from Peru, and *O. micranthus* was based on *Bertero* 848 from *Quillota*, Chile.

5. ***Mirabilis expansa*** (R. & P.), comb. nov. *Calyxhymenia expansa* R. & P. Fl. Peruv. 1: 45. pl. 75, f. a. 1798. *Oxybaphus expansus* Vahl, Enum. Pl. 2: 41. 1806. *Allionia expansa* *Kuntze*, Rev. Gen. 533. 1891.

A coarse herb, suberect or procumbent or even subscandent, the stems sometimes 2.5 m. long but usually much shorter, the branches rather stout, very sparsely puberulent or villosulous or practically glabrous, the internodes mostly longer than the leaves; leaves rather thick, the petioles stout and relatively short; leaf blades varying from ovate-rounded to rhombic-ovate, broadly ovate, elliptic, or oblong-ovate, mostly 2.5–5 cm. long, truncate to acute at the base, often abruptly decurrent, very rarely cordate, obtuse to rounded at the apex, the uppermost leaves sometimes acute, puberulent, pilosulous or glabrate; inflorescence cymose-paniculate, usually rather sparse, the involucre mostly in small dense clusters; involucre 1-flowered, 4–5 mm. long, not accrescent, densely viscid-villosulous, sometimes densely covered with short hairs tipped with red glands, the lobes ovate-triangular, obtuse or acute, much shorter than the tube; perianth red-purple, 6 mm. long, sparsely puberulent or glabrous; stamens 3, usually not exserted; anthocarp ellipsoid, 3 mm. long, obtuse at each end, dark olivaceous, glabrous, almost smooth.

Venezuela: Mucurubá, 2,500 m., on stream bank, *Gehriger 187* (F). —Ecuador: Alausí, Prov. Chimborazo, 2,500 m., *Hitchcock 20703* (W), *20702* (W). Ambato, *Pachano 34* (W). In fruticetis interandinis ad Cotacollao, *Mille 413* (W).—Chile: Valparaíso, November, 1924, *Behn* (F). Also in Peru, from which country the species was described.

The species is a somewhat variable one, and not sharply distinct from *M. prostrata*. The specimen from the isolated Venezuelan locality is remarkable for the abundant hairs with bright red glands at the tip covering the involucre and peduncles, but similar pubescence is found also in material from other regions. Some of the Ecuador specimens are noteworthy for their almost reniform, small leaves. Although they are appreciably different in appearance from Peruvian and other collections, they do not seem to be clearly separable from them.

THE CHENOPODIACEAE OF NORTHWESTERN SOUTH AMERICA

PAUL C. STANDLEY

The species of Chenopodiaceae occurring in northwestern South America are so few, and of so little general interest, that it is questionable whether it is worth while to publish an enumeration of them. The only genera, indeed, with any considerable number of species in the area under consideration are *Chenopodium* and *Atriplex*, and several of the representatives of the former group are widely dispersed weeds.

The region covered embraces Venezuela, Colombia, Ecuador, and Bolivia, treatment of the Peruvian Chenopodiaceae being reserved for publication elsewhere. It has been found necessary to describe but one new species, an *Atriplex*. While few further plants of this somewhat "weedy" family may be expected in northwestern South America, it would not be surprising if a few additions in *Atriplex* and *Chenopodium* should appear in later collections.

The present paper is based upon the material in the Herbarium of Field Museum, and upon that of the United States National Museum, lent for study through the courtesy of Dr. William R. Maxon and Mr. Ellsworth P. Killip.

KEY TO THE GENERA

Embryo spirally coiled. Flowers all axillary; leaves terete or semiterete, very fleshy and succulent.....1. *Suaeda*.

Embryo not spirally coiled.

Flowers in fleshy spikes or sunken in the joints of the stems; leaves much reduced and scalelike.

Flowers in conelike spikes, the bracts free and deciduous.

2. *Heterostachys*.

Flowers sunken in the joints of the stems, the bracts united and persistent.....3. *Salicornia*.

Flowers usually glomerate, or solitary in the axils; leaves usually well developed.

Flowers usually perfect, ebracteolate.....4. *Chenopodium*.

Flowers unisexual, the pistillate ones subtended by 2 bracteoles which enlarge in age and enclose the fruit.....5. *Atriplex*.

Besides the genera listed formally, there are cultivated in the region under consideration the beet, *Beta vulgaris* L., and spinach, *Spinacia oleracea* L.

1. SUAEDA Forsk.

Annuals or perennials, erect or prostrate, glabrous or pubescent, herbaceous or suffrutescent; leaves alternate, terete or semiterete, rarely flat, entire, fleshy; flowers minute, chiefly perfect, solitary or glomerate in the leaf axils; perianth fleshy, 5-lobed; stamens 5; fruit a compressed or depressed utricle, enclosed in the perianth; seed horizontal or erect, smooth or roughened.

1. *Suaeda foliosa* Moq. in DC. Prodr. 13²: 156. 1849.

Apparently perennial, glabrous or nearly so, much branched, the stout branches roughened by the persistent leaf bases of fallen leaves; leaves mostly 5–8 mm. long, glaucous, very thick and fleshy, obtuse or acutish, semiterete, glabrous; flowers minute, green, solitary or in clusters of 3.

The species occurs in Peru and Chile. The only report of the genus *Suaeda* from the countries here covered is the publication of *Suaeda fruticosa* var. *crassifolia* Moq. (in DC. Prodr. 13²: 157. 1849), which was based upon a specimen collected in Bolivia by D'Orbigny. No Bolivian material has been seen by the writer, but it seems probable that any *Suaeda* occurring there will prove to be *S. foliosa*, although there is a possibility that it might be the Argentine *S. divaricata* Moq.

2. HETEROSTACHYS Ung.-Sternb.

Tall erect much-branched shrubs with stiff woody branches; leaves minute, opposite or subopposite, free, suborbicular, obtuse, closely imbricate; flowers perfect, solitary in the axils of opposite deciduous bracts, the flower spikes resembling small cones; perianth orbicular, membranaceous, complanate, broadly winged on each side, 4-lobate; stamens 2; utricle compressed, oblong-obovoid; seed ellipsoid, compressed, smooth.

The genus consists of a single species.

1. *Heterostachys Ritteriana* (Moq.) Ung.-Sternb. Atti Congr. Bot. Firenze 332. 1876. *Halocnemum Ritterianum* Moq. Chenop. Enum. 109. 1840. *Halostachys Ritteriana* Moq. in DC. Prodr. 13²: 148. 1849. *Spirostachys Ritteriana* Ung.-Sternb. Vers. Syst. Salicorn. 100. 1866.

A slender, densely branched, glabrous shrub; leaves about 1.5 mm. long and broad, closely overlapping; flower spikes sessile or short-pedunculate, 4–12 mm. long, obtuse, many-flowered; bracts broader than long, concave, clasping, very obtuse.

Colombia: Wind-swept plains of Río Hacha, one-half mile back from the coast, February 6, 1914, *J. G. Sinclair* (W).—Venezuela: La Vela de Coro, *Curran & Haman 442* (W).—Argentina: Totoralejas, November, 1892, *Kuntze* (F). Also in Hispaniola.

3. SALICORNIA L.

Annuals or perennials, sometimes suffrutescent, fleshy, glabrous, with jointed branches, the joints dilated at the apex into a short sheath; flowers perfect or polygamous, immersed in groups of 3–7 on opposite sides of the joints, the flowering joints forming cylindric terminal spikes; perianth obpyramidal, fleshy, 3–4-dentate; stamens 1–2; fruit a minute utricle, included in the perianth; seed erect, compressed, minutely hairy.

1. *Salicornia fruticosa* L. Sp. Pl. ed. 2. 5. 1762. *S. peruviana* HBK. Nov. Gen. & Sp. 2: 193. 1818. *S. Gaudichaudiana* Moq. Chenop. Enum. 115. 1840. *S. biloba* Kunze ex Fenzl in Mart. Fl. Bras. 5¹: 158. 1864, as syn.

An erect or prostrate perennial, suffrutescent at the base, much branched, the secondary branches ascending or erect, usually branched, the joints mostly 1–2 cm. long; sheaths rounded or with acutish lobes; flower spikes about 2 cm. long and 3 mm. thick, the flowers in groups of 3; seed yellowish brown, covered with short conic hairs.

Venezuela: Paraguaná Peninsula, *Curran & Haman 557* (W).—Ecuador: Between Guayaquil and Salinas, Prov. Guayas, *Hitchcock 19996* in part (W; part of this number is *Batis maritima* L.).—Bolivia: Páña, 4,000 m., salt-steppes, *Buchten 1385* (W; material immature and imperfect and determination therefore uncertain).—Chile: Desert of Atacama, *Morong 1159* (F). Arauco, salt marsh, *Pennell 12931* (F). Ancud, Prov. Chiloe, moist sand in rock crevices on beach, *Pennell 12579* (F). Widely dispersed on seashores of both hemispheres.

4. CHENOPODIUM L.

Annual or perennial herbs, rarely suffrutescent, often strong-scented, usually either glandular or covered with a meal-like pubescence of small whitish inflated hairs; leaves alternate, mostly petiolate, entire to pinnatifid; flowers chiefly perfect, small and green, usually glomerate; perianth normally 5-lobate; stamens 5 or fewer; fruit an utricle, erect or depressed, the pericarp free from or adherent to the seed; seed horizontal or vertical.

The American species of the genus have been treated in detail by Aellen, Repert. Sp. Nov. 26: 31–64, 119–160. 1929. That author has given an excellent account of the synonymy of the American species, with citation of specimens available to him for study.

Seed vertical. 1. *C. macrospermum*.

Seed horizontal.

Embryo not completely encircling the endosperm; leaves and inflorescence bearing numerous glands.

Pericarp gland-dotted; flowers in spikes.....2. *C. ambrosioides*.

Pericarp not gland-dotted; inflorescence dichotomous, some of the flowers pediceled.....3. *C. incisum*.

Embryo completely encircling the endosperm; plants without glands.

Seed white or nearly so.....4. *C. quinoa*.

Seed black or blackish.

Leaves shining on the upper surface, green but sparsely farinose. Inflorescences chiefly axillary and rather few-flowered, lax.....5. *C. murale*.

Leaves dull on the upper surface.

Plants low, 50 cm. high or less, with spreading branches; leaves small, 2 cm. long and broad or less, shallowly or rather deeply 3-lobed.

Seed irregularly punctate.....6. *C. pallidicaule*.

Seed smooth or nearly so, not punctate...7. *C. carnosulum*.

Plants tall and erect; leaves commonly much more than 2 cm. long.

Leaves chiefly deltoid, entire except for the hastate lobes at the base, commonly obtuse, finely farinose, usually pale; seed scarcely 1 mm. broad.....8. *C. petiolare*.

Leaves mostly rhombic and sinuate-dentate; seed 1.3–1.8 mm. broad.

Mature seed deeply punctate; plants ill-scented.

9. *C. hircinum*.

Mature seed minutely puncticulate or almost smooth; plants without a distinctive odor...10. *C. album*.

1. ***Chenopodium macrospermum* Hook. f., var. *halophilum*** (Phil.), comb. nov. *C. halophilum* Phil. Anal. Univ. Chile 18: 67. 1861. *C. murale* var. *farinosum* Wats. Proc. Amer. Acad. 9: 97. 1874. *C. farinosum* Standl. N. Amer. Fl. 21: 28. 1916. *C. macrospermum* subsp. *halophilum* Aellen, Repert. Sp. Nov. 26: 42. 1929. *C. macrospermum* subsp. *halophilum* f. *subviride* Aellen, Repert. Sp. Nov. 26: 43. 1929. *C. macrospermum* subsp. *halophilum* f. *farinosum* Aellen, loc. cit. *C. macrospermum* subsp. *halophilum* f. *latifolium* Thellung & Aellen, loc. cit. *C. macrospermum* subsp. *halophilum* f. *angustius* Thellung & Aellen et f. *nanum* Aellen, op. cit. 44. 1929.

An annual, branched from the base, suberect or spreading, sometimes 50 cm. high but often much reduced, with branches only 2–4

cm. long; leaves petiolate, rhombic or deltoid-rhombic, 1–6 cm. long, green and glabrate on the upper surface, usually densely whitish-farinose beneath, sinuate-dentate to subentire; flowers spicate, the spikes axillary and forming narrow dense leafy terminal panicles; seed dark reddish brown, 1 mm. long.

Bolivia: Guaqui, Lake Titicaca, 3,820 m., *Buchtien* 2828 (W). Near La Paz, 3,000 m., *Bang* 199 (F, W).—Chile: Arauco, at sea level, salt marsh, *Pennell* 12919 (F).—Argentina: General Roca, Río Negro, 250–360 m., *W. Fischer* 276 (F).—Paraguay: Río Pilcomayo, *Morong* 918 (F). Also in Mexico and southern California, and adventive at various places in the United States and in Europe. The typical form of the species occurs in the Falkland Islands.

The species is a variable one in stature and leaf form, but the forms to which names have been given seem to be of little significance. The plant has been confused by various authors with *C. rubrum* L. and *C. glaucum* L. In general appearance it suggests a large and overgrown plant of the latter species. Aellen lists the Chilean *Blitum salsum* Phil. as a synonym of var. *halophilum*.

2. *Chenopodium ambrosioides* L. Sp. Pl. 219. 1753. *C. anthelminticum* L. Sp. Pl. 220. 1753.

An ill-scented annual or perennial, erect or ascending, usually much less than 1 m. high, conspicuously glandular, commonly more or less villous or puberulent; lower leaves petiolate, narrow, sinuate-dentate or sinuate-pinnatifid, the upper ones mostly entire or nearly so; flowers densely glomerate, forming slender or stout, naked or leafy, often much elongate spikes.

Colombia: Mutiscua, Norte de Santander, 2,900 m., *Killip & Smith* 19665 (F). Santa Marta, 750 m., *H. H. Smith* 542 (F). Highlands of Popayán, 1,600–2,000 m., *Lehmann* BT543 (F).—Bolivia: Buenavista, Dept. Santa Cruz, 500 m., *Steinbach* 5135 (F). Hacienda Casana, Tipuani Valley, 1,400 m., *Buchtien* 7281 (W). Yungas, *Bang* 281 (F). La Paz, 3,400 m., *Buchtien* 4137 (F).—Argentina: In distr. urb. Posadas, Misiones, *Lilliesköld* (F). General Roca, Río Negro, 250–360 m., *W. Fischer* 240 (F). Siambon, Sierra de Tucumán, *Hieronymus* 763 (F). Cuesta del Cerro, Sierra Achala de Córdoba, *Hieronymus* 533 (F). La Ciénaga, Sierra de Tucumán, *Lorentz & Hieronymus* 718 (F). Prov. Córdoba, *Lossen* 160 (F), 207 (F).—Chile: Desert of Atacama, *Morong* 1156 (F).—Uruguay: Casavalle, Dept. Montevideo, *Herter* 55a (F). Widely distributed as a weed in tropical America; naturalized in the United States and in Europe.

Called "paico" in the Amazonian region of Peru. The name "baico," evidently a corruption or misspelling of *paico*, is recorded from Colombia by Killip, who reports the plant as a remedy for "tropical anemia." Its seeds are, of course, a well-known remedy for intestinal parasites.

2a. *Chenopodium ambrosioides* L., subsp. *chilense* (Schrad.) Aellen, Repert. Sp. Nov. 26: 36. 1929. *C. chilense* Schrad. Ind. Sem. Hort. Goett. 1832: 2. 1832. *C. vagans* Standl. N. Amer. Fl. 21: 26. 1916. *C. querciforme* Murr, Mag. Bot. Lap. 3: 1. 1904.

Similar to the species; leaves usually smaller and more deeply incised, even the uppermost deeply sinuate-lobate; spikes usually elongate, very dense, and naked or nearly so.

Bolivia: La Paz, 3,700 m., open stony banks, *Pennell 14258* (F); 3,000 m., *Bang 52* (F).—Chile: Arauco, at sea level, sandy knolls along salt marsh, *Pennell 12934* (F). Alto del Carmen, Vallenar, Prov. Atacama, 800 m., *Werdermann 155* (F). Reported from many localities in Chile; Santa Catharina, Brazil; naturalized in California.

3. *Chenopodium incisum* Poir. in Lam. Encycl. Suppl. 1: 392. 1811. *Teloxys Mandoni* Wats. Proc. Amer. Acad. 9: 91. 1874. *C. incisum* var. *Bangii* Murr, Bull. Herb. Boiss. II. 4: 991. 1904. *C. rigidum* Lingelsh. Repert. Sp. Nov. 7: 241. 1909.

An erect annual, strong-scented, 60 cm. high or less, simple or branched from the base, the branches sparsely puberulent or glabrate; leaves slender-petiolate, the blades deltoid-ovate to oblong, sinuate-pinnatifid or laciniate-pinnatifid, bearing numerous yellow glands beneath; inflorescence of numerous loosely few-flowered, axillary cymes; flowers sessile in the forks of the branches and solitary at the ends of the slender lateral branches, the pedicellate flowers usually abortive, their pedicels spinose; seed 0.5–0.8 mm. broad, dark brown.

Bolivia: La Paz, 3,500 m., *Buchtien 33* (F). Talca Chugiaguillo, *Bang 799* (F, W). La Paz, 3,000 m., *Bang 3* (W). Pazña, 4,200 m., *Buchtien 1383* (W). Cotaña am Ilimani, 3,450 m., *Buchtien 6305* (W). Cochabamba, *Bang 1004* (W; type collection of var. *Bangii*). La Paz, am Wege nach Obrajes, 3,500 m., *Buchtien 4562* (W). Valle, Prov. Cercado, Dept. Cochabamba, 2,750 m., *Steinbach 9710* (F). Also in Argentina and Peru, and ranging from Mexico to the southwestern United States.

Chenopodium rigidum was based upon Bolivian material. The type of *Teloxys Mandoni* is *Mandon 1026* from Bolivia.

4. *Chenopodium quinoa* Willd. Sp. Pl. 1: 1301. 1797. *C. purpurascens* Jacq., var. *punctulatum* Moq. in DC. Prodr. 13: 67. 1849. *C. Nuttalliae* Safford, Journ. Wash. Acad. Sci. 8: 523. 1918. *C. quinoa* f. *purpureum* Aellen, Repert. Sp. Nov. 26: 124. 1929.

A coarse erect annual, often 1 m. high or more, sparsely and finely farinose, green or somewhat purplish (f. *purpureum*); leaves slender-petiolate, the blades large, broadly rhombic, sinuate-dentate, sometimes obscurely lobate at the base; inflorescence erect, stout and dense, compact, very leafy; seeds whitish, about 1.5 mm. broad.

Ecuador: Ambato, *Pachano 40* (W); *Rose & Rose 22355* (W).—Bolivia: La Paz, 3,750 m., *Buchtien 552* (F, W), *516* (F). Polo-Polo,

North Yungas, 1,100 m., *Buchtien 6304* (W). Yungas, *Bang 281* (W). La Paz, *Claude-Joseph 1172* (W). Also in Peru and Argentina.

"Quinoa" (Bolivia, Peru). The plant is cultivated commonly in the Andes for its edible seeds.

5. *Chenopodium murale* L. Sp. Pl. 219. 1753.

An erect or ascending annual, 60 cm. high or less, deep green but sparsely farinose, often much branched from the base; leaves slender-petiolate, the blades ovate or ovate-rhombic, 3–8 cm. long, sinuate-dentate; flowers in small glomerules, these arranged in lax or dense, chiefly axillary, mostly leafless cymes or panicles; seed 1.2–1.5 mm. broad, dull, finely puncticulate.

Curaçao: In 1917, *Curran & Haman 12* (W).—Colombia: Pamplona, Norte de Santander, 2,300 m., in field, *Killip & Smith 20744* (W). Mutiscua, Norte de Santander, 2,900 m., *Killip & Smith 19664* (W).—Venezuela: Caracas, 900 m., *Bailey 19* (W); "a common weed." Between Antimano and Las Adjuntas, Distrito Federal, *Pittier 12263* (W). Timotes, Mérida, 2,000 m., waste places, *Pittier 12691* (W). El Colorado, Tacagua Valley, Distrito Federal, *Pittier 11102* (W). Petare, Miranda, 800 m., *Pittier 9691* (W). Without locality, *Curran & Haman 735* (W).—Ecuador: Ambato, *Pachano 23* (W).—Bolivia: Cotaña, near Ilimani, 2,450 m., *Buchtien 3161* (W).—Chile: Coquimbo, 20 m., *Werdermann 129* (F). Desert of Atacama, *Morong 1155* (F).—Argentina: Córdoba, October 10, 1877, *Hieronymus* (F).—Brazil: Tijuca, Prov. Rio de Janeiro, *Glaziou 9566* (F). A native of Europe and other parts of the Old World, but widely naturalized as a weed in temperate and tropical regions of the Americas.

The vernacular name is reported from Curaçao as "picante sjimaron."

6. *Chenopodium pallidicaule* Aellen, Repert. Sp. Nov. 26: 126. 1929.

An erect or spreading annual, 60 cm. high or less, branched from the base, with pale stems, sparsely farinose; leaves slender-petiolate, the blades small, 1–2 cm. long and broad, trilobate, the lobes entire or nearly so, the blades of the uppermost leaves sagittate or entire; flower spikes short and dense, usually shorter than the leaves; seed dark brown, minutely and irregularly punctate.

Bolivia: Comanche, 4,000 m., *Buchtien 6296* (W). Also in the mountains of Peru.

7. *Chenopodium carnosulum* Moq. in DC. Prodr. 13²: 64. 1849.

An ascending or spreading, much-branched annual, 30 cm. high or less, sparsely farinose when young, becoming glabrate; leaves petiolate, the blades mostly 1 cm. long or less, entire or shallowly

trilobate, thick and fleshy; flowers in small dense axillary glomerules shorter than the leaves; seed 1 mm. broad, nearly black.

Ecuador: Ambato, 2,600 m., *Hitchcock 21730* (W).—Bolivia: Uyuni, 3,700 m., *Asplund 6295* (W). La Paz, *Claude-Joseph 1115* (W). Also in Chile, Argentina, and southern Mexico.

8. *Chenopodium petiolare* HBK. Nov. Gen. & Sp. 2: 191. 1818. *C. paniculatum* Hook. Bot. Misc. 2: 237. 1831. *C. sparsiflorum* Phil. Anal. Univ. Chile 91: 419. 1895. *C. bolivianum* Murr, Mag. Bot. Lap. 1: 359. 1902. *C. Collae* Phil. ex Aellen, Repert. Sp. Nov. 26: 148. 1929, as syn. *C. parvulum* Phil. ex Aellen, loc. cit., as syn. *C. petiolare* f. *incanum* Aellen, Repert. Sp. Nov. 26: 150. 1929. *C. petiolare* f. *hastatum* Aellen, loc. cit. *C. petiolare* f. *scutatum* Aellen, op. cit. 151. 1929. *C. petiolare* f. *trilobum* Aellen, loc. cit.

Plants erect or spreading, sometimes 1 m. high, slender and much branched, pale, the branches rather densely and finely farinose; leaves slender-petiolate, the blades thin, densely farinose or rarely green and glabrate, very variable in outline, small, commonly more or less deltoid and distinctly hastate-lobate at the base, otherwise entire or remotely sinuate-dentate; inflorescence large and open, much branched, the spikes slender and much interrupted, naked or with few reduced leaves; seed black or blackish.

Ecuador: Type collected at Riobamba by *Humboldt & Bonpland*. Ambato, *Rose & Rose 22387* (W); *Tate 537* (W).—Bolivia: La Paz, 3,000 m., *Bang 56* (W; type collection of *C. bolivianum*); *Rose 18905* (W); at 3,500 m., roadside, *Pennell 14214* (F, W); at 3,500 m., *Buchtien 2827* (W); at 4,000 m., *Claude-Joseph 1173* (W). Without locality, *Bang 2897* (W). La Paz, 3,800 m., sunny slopes, *Buchtien 144* (W). Pazaña, 4,100 m., among rocks, *Buchtien 1384* (W). Cotaña am Ilimani, 2,450 m., *Buchtien 227* (F), *2827* (W).—Chile: Viña del Mar, August 3, 1930, *Behn* (F). Tacna, 650 m., *Werdermann 733* (F). Desert of Atacama, *Morong 1230* (F). La Serena, Prov. Coquimbo, 20 m., *Werdermann 374* (F). Also in Peru.

The species has been reported from Bolivia as *C. Fremonti* Wats. and as *C. Fremonti* var. *incanum*. The forms named by Aellen are based upon leaf variations of slight systematic importance. Brother Claude-Joseph reports from La Paz as the Aymara name "cañagira."

9. *Chenopodium hircinum* Schrad. Ind. Sem. Hort. Goett. 1833: 2. 1833. *C. quinoa* var. *orbicans* Murr, Mag. Bot. Lap. 3: 37. 1904. *C. hircinum* subsp. *eu-hircinum* Aellen, Repert. Sp. Nov. 26: 120. 1929. *C. hircinum* subsp. *eu-hircinum* var. *typicum* Ludwig & Aellen, op. cit. 121. 1929. *C. hircinum* subsp. *eu-hircinum* var. *rhombicum* Aellen, op. cit. 122. 1929. *C. hircinum* subsp. *Milleaenum* Aellen, loc. cit.

Plants annual, tall and coarse, often 1 m. high or more, erect, the pale stems more or less striate; leaves long-petiolate, large, broadly rhombic, coarsely sinuate-dentate and often shallowly trilobate,

green but sparsely and minutely farinose; inflorescence very dense, narrow, leafy, the branches short and erect or ascending.

Colombia: Eastern paramos of Guasca, toward Gachetá, *Ariste-Joseph* in 1921 (W). Reported by Aellen from the Río Magdalena, *Stübel* 476.—Ecuador: Turubamba, Prov. Pichincha, 2,800 m., *Firmín* 228 (W). Type of subsp. *Milleannum* from Riobamba, *Mille* 6a.—Bolivia: La Paz, *Bang* 61 (F, W). Also in Peru, Chile, Argentina, Paraguay, and Uruguay.

The local name is reported from Ecuador as "sacha-quinua."

10. *Chenopodium album* L. Sp. Pl. 219. 1753.

An erect annual 1–2 m. high, usually much branched, pale green and finely farinose; leaves petiolate, the blades broadly rhombic to lanceolate, often shallowly trilobate, sinuate-dentate; inflorescence large and open or small and condensed; seed 1.3–1.5 mm. broad, nearly smooth, black and shining.

Ecuador: Reported by Aellen (*Repert. Sp. Nov.* 26: 129. 1929) from Ambato, *Pachano* 38. A native of the Old World, but extensively naturalized in North America. Reported in South America also from Chile and Brazil.

5. *ATRIPLEX* L.

Shrubs or herbs, more or less furfuraceous, farinose, or canescent with inflated hairs; leaves alternate or opposite; flowers monoecious or dioecious, usually glomerate, the glomerules axillary or disposed in solitary or paniced spikes; staminate perianth 3–5-parted; stamens 3–5; pistillate flowers bibracteolate, the bractlets accrescent, free or united, enclosing the fruit, the perianth usually none; seed erect or inverted, rarely horizontal.

In the countries of South America covered in the present paper there are few species of *Atriplex*, but in Argentina and Chile the genus is amply represented, although not so extensively as in western North America.

Leaves sessile, cordate at the base. 1. *A. imbricata*.

Leaves petiolate or, if subsessile, acute at the base.

Leaf blades rhombic or broadly ovate, broadest near the base, undulate-lobate, long-petiolate; a tall shrub, 1–2 m. high.

2. *A. Rusbyi*.

Leaf blades oblong to elliptic or obovate, broadest at or above the middle, entire or dentate, the petiole usually short and not sharply differentiated from the blade; herbs or low shrubs.

Fruiting bracts not crested or tuberculate dorsally.

United portion of the bracts short-tubular, abruptly dilated into the free portion. 3. *A. oestophora*.

United portion of the bracts broadly obovoid, gradually expanded into the free portion. 4. *A. Asplundii*.

Fruiting bracts cristate or tuberculate dorsally.

Plants coarse and large, procumbent or ascending; leaves mostly 10–15 mm. long, often dentate. . . 5. *A. pentandra*.

Plants small, prostrate, forming dense mats; leaves chiefly 4–7 mm. long, entire. 6. *A. Herzogii*.

1. *Atriplex imbricata* (Moq.) D. Dietr. Syn. Pl. 5: 536. 1852.
Obione imbricata Moq. in DC. Prodr. 13²: 108. 1849.

A low shrub with stout pale branches, densely furfuraceous-canescent throughout; leaves thick, sessile, broadly deltoid-cordate, as much as 1 cm. long but usually much smaller, obtuse or acutish, entire; fruiting bracts axillary, about 2 mm. long, densely tuberculate dorsally.

Bolivia: Chiguana, 3,700 m., *Asplund* 6297 (W). Uyuni, 3,700 m., *Asplund* 6298 (W). Type collected in Bolivia by D'Orbigny.

The two collections cited do not agree perfectly with the original description, although they are the only specimens examined that can possibly represent the species. Moquin describes the leaves as only 2–3 mm. long. The two *Asplund* collections show rather young branches with decidedly larger leaves, but it may well be that mature branches of the same plants would have minute leaves.

The specimens cited above evidently are close to *Atriplex axillaris* Phil., a Chilean species, and also to *A. microphylla* Phil., of the same country. The specimens of *A. microphylla* that I have seen agree perfectly with the original description of *Obione imbricata*.

2. *Atriplex Rusbyi* Britton, Mem. Torrey Club 4: 250. 1895.

A stout shrub 1–2 m. high, pale and densely furfuraceous throughout; leaves thick, petiolate, the blades mostly rhombic or deltoid and 2–3.5 cm. long, short-decurrent to truncate at the base, obtuse, coarsely undulate-lobate or undulate, often crispate; flowers monoecious, the staminate spikes axillary or forming terminal panicles; fruiting bracts broadly flabelliform, 4–5 mm. long and somewhat broader, obscurely dentate on the free margin, smooth or short-tuberculate dorsally near the base.

Bolivia: Near La Paz, 3,000 m., *Bang* 181 (F, W, type collection), 184 (W); 3,750 m., *Buchtien* 575 (F, W). Huaricana, 2,800 m., alkaline soil, *Buchtien* 145 (W). La Granja, 2,600 m., *Julio* 139 (W).

3. *Atriplex oestophora* Blake, Contr. Gray Herb. 53: 32. 1918.

Described as a shrub 60 cm. high, but probably merely suffrutescent or herbaceous, pale and minutely furfuraceous throughout, copiously branched; leaves sessile, obovate or oblong-obovate,

1.5–3 cm. long, entire, retuse at the apex, attenuate to the base; flowers monoecious; bracts united to the middle, 4–5 mm. long, the free portion broadly deltoid, obtuse, entire, 4–5 mm. wide.

Venezuela: Vela de Coro, *Curran & Haman 451* (W, type collection).

4. *Atriplex Asplundii*, sp. nov.—Herba perennis e radice lignoso crasso, ramis gracilibus 10–25 cm. longis subteretibus dense lepidoto-furfuraceis simplicibus vel parce ramosis, internodiis foliis brevioribus; folia alterna breviter petiolata parva, petiolo crassiusculo 2–4 mm. longo; lamina ovalis vel rotundata, interdum ovato-ovalis, 10–17 mm. longa, 5–14 mm. lata, apice rotundata, basi abrupte contracta et breviter decurrens, integra, crassiuscula, utrinque canescens, dense minute lepidoto-furfuracea; flores monoeci, masculis cum femineis intermixtis in glomerulis parvis axillaribus; calyx floris masculi 5-fidus, laciniis oblongis obtusis, antheris exsertis luteis; bracteae fructiferae axillares sessiles viridescentes minute furfuraceae late rhombeae c. 2 mm. longae et paullo latiores, integrae vel supra remote obscure tridenticulatae, dorso inappendiculatae, basi late rotundato-cuneatae.—Bolivia: Ulloma, alt. 4,000 m., February 26, 1921, *E. Asplund 6295* (U. S. Nat. Herb. 1,157,661, type).

5. *Atriplex pentandra* (Jacq.) Standl. N. Amer. Fl. 21: 54. 1916. *Axyris pentandra* Jacq. Sel. Stirp. Amer. 244. 1763. *Atriplex cristata* Humb. & Bonpl. ex Willd. Sp. Pl. 4: 959. 1806. *Obione cristata* Moq. Chenop. Enum. 73. 1840.

An annual or perennial, sometimes suffrutescent at the base, much branched, pale and minutely furfuraceous throughout; leaves alternate, subsessile, the blades oblong to obovate, 1–3 cm. long, rounded to acute at the apex, attenuate to the base, the lower leaves usually dentate but the upper often entire; flowers monoecious, the staminate in short dense inconspicuous terminal spikes, the pistillate fascicled in the upper leaf axils; fruiting bracts sessile, broadly cuneate-orbicular, 3 mm. long and usually somewhat broader, dentate, much thickened at maturity, dorsally densely cristate or muricate.

Venezuela: Type from Cumaná, *Humboldt & Bonpland*. Cabo Blanco, Distrito Federal, trailing on beach, *Pittier 12424* (F, W); *10322* (W). Without locality, *Curran & Haman 1248* (W).—Curaçao: Beaches and lagoons, *Curran & Haman 74* (W). Also in the West Indies and Florida.

The species has been reported vaguely from Colombia, but I have seen no specimens from that country, where it may well be expected to occur. Reports of the occurrence of this species farther southward in South America are based upon incorrect determinations.

6. *Atriplex Herzogii*, nom. nov. *A. serpyllifolia* Herzog, Med. Rijks Herb. 27: 11. 1915, non Bunge, 1877. *A. cristata* Humb. &

Bonpl., var. *pulvinata* Kuntze, Rev. Gen. 3²: 266. 1898. *A. cristata* var. *depauperata* Kuntze, loc. cit.

A perennial from a thick woody root, much branched from the base, the stems prostrate and forming dense mats, 10–40 cm. long, the whole plant pale and minutely furfuraceous or sometimes greenish; leaves very numerous, minute or small, alternate, subsessile, oblong to obovate, usually 4–7 mm. long but often somewhat larger, obtuse or rounded at the apex; flowers monoecious, the staminate glomerules small, terminal, solitary or short-spicate, inconspicuous, the pistillate flowers solitary or fasciculate in the leaf axils; fruiting bracts cuneate-orbicular, about 2 mm. long and often slightly broader, obscurely dentate, usually densely tuberculate dorsally.

Bolivia: Type from dry cliffs of Cerro de Oruro, at 3,800 m., *Herzog 2520*. Oruro, 4,000 m., March 14, 1894, *Kuntze* (F, type collection of var. *pulvinata*). La Paz, 3,750 m., *Buchtien 514* (F, W). Obrajés, La Paz, 3,300 m., *Buchtien 5303* (W). La Paz, 3,000 m., *Bang 84* (W). Viacha, 3,900 m., *Asplund 6302* (W). Chiguana, 3,700 m., *Asplund 6301* (W). Uyuni, 3,700 m., *Asplund 6300* (W), *6299* (W). Also in Peru.

It is possible that more than one species is represented by the specimens listed, which exhibit some variation. I have seen no specimen of var. *depauperata*, based upon material collected by Kuntze at Cochabamba, but presumably it is a synonym or form of *A. Herzogii*. Kuntze reports also a var. *parvifolia* of *A. cristata*, which he collected at Carcaje, at an elevation of 3,000 m. Presumably it also is referable here.

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NEW PLANTS FROM BRITISH HONDURAS

PAUL C. STANDLEY

The new species of British Honduras plants described on the following pages have been found mostly in two large series of plants obtained in that country during 1931-32, and forwarded in whole or part to the writer for study. Mr. William A. Schipp has continued his collections, begun several years ago, and the numbers of his regular series are now well in excess of a thousand. In addition, he has prepared a separate series, of plants not found in sufficient quantity for distribution in his regular sets, the numbers of this secondary series being preceded by the capital letter *S*. All Mr. Schipp's recent collections have been made in the southern half of the colony, the latest one in the Toledo District, in the region of Punta Gorda. A high percentage of the newer collections has consisted of species unknown previously from the colony, and he has discovered almost as high a proportion of new species as in his earlier sendings. Evidently there still is much to be learned of the British Honduras flora.

No less important, but, indeed, greater in number, are the collections made in the early months of 1931 in British Honduras and Petén by Professor H. H. Bartlett (an expedition of the Herbarium and the Museum of Zoology of the University of Michigan cooperating with the Department of Historical Research of the Carnegie Institution of Washington in a biological survey of the Maya area). His British Honduras material was obtained chiefly in the El Cayo District, previously unexplored. The portion of his collections studied by the writer has contained scores of species new to the flora of the colony, and various well-marked species new to science.

Professor Bartlett also has sponsored collections made in the El Cayo and Corozal Districts by Mr. Percy H. Gentle, and these likewise have contributed substantially to the rapidly developing picture of the characteristic vegetation of this portion of the Yucatan Peninsula.

***Philodendron belizense*, sp. nov.** Sect. *Pteromischum*.—Scandens usque ad 9 m. longa, ramulis teretibus in sicco ochraceis leviter striatis 1 cm. crassis, internodiis brevibus; petiolus crassius-

culus 16–19 cm. longus, vagina angusta persistente paullo infra laminae basin soluta apice obtusa instructus; lamina membranacea late ovato-oblonga 34–38 cm. longa 16–17 cm. lata apicem versus paullo angustata breviter subabrupte acuminata, nervis primariis c. 20-jugis angulo fere recto divergentibus quam secundarii valde distinctioribus; pedunculus crassus 2–2.5 cm. longus; spatha anguste oblonga 14.5 cm. longa involuta alba; cetera ignota.—British Honduras: Base of Cockscomb Mountains, altitude 150 m., June 15, William A. Schipp 545 (Herb. Field Mus. Nos. 621,939–940, type).

A relative, apparently, of *P. guttiferum* Kunth, a frequent Central American species, which is smaller in all its parts.

Heisteria Chippiana, sp. nov.—Arbor 12-metralis omnino glabra, trunco 30 cm. diam., ramulis crassis brunneo-olivaceis subteretibus, internodiis brevibus; folia majuscula breviter petiolata subcoriacea, petiolo crasso 8–14 mm. longo; lamina oblonga vel lanceolato-oblonga 10–13 cm. longa 4–5.5 cm. lata sensim vel abrupte breviterque obtuso-acuminata, basi acuta, sublucida, costa supra subimpressa nervis obsoletis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus irregularibus prominulis angulo acuto adscendentibus, venulis obsoletis; flores subsessiles vel breviter crasse pedicellati; calyx in statu fructifero 3–4 cm. latus patens vel plus minusve reflexus primo viridis, serius purpureo-ruber, fere ad medium lobatus, lobis latissimis late rotundatis; drupa globosa ochroleuca 1.5 cm. diam. et ultra apice rotundata.—British Honduras: Nineteen Mile, Stann Creek Valley, along creek bank, very rare, altitude 100 m., July 9, 1932, William A. Schipp 970 (Herb. Field Mus. No. 657,802, type).

The collector states that the wood is close-grained and has a silky sheen. Among the few Central American species of *Heisteria*, this may be recognized at once by its extraordinarily large fruits. At Mr. Schipp's request, it is named for the late Dr. T. F. Chipp, of the Royal Botanic Gardens, Kew.

Desmopsis Schippii, sp. nov.—Arbor 9-metralis, trunco 22 cm. diam., ramulis gracilibus adpresso-pilosulis vel glabratiss, internodiis brevibus; folia mediocria rigide membranacea breviter petiolata in sicco olivacea, petiolo crassiusculo 4–6 mm. longo adpresso-pilosulo; lamina elliptica vel oblongo-elliptica 12–16 cm. longa 4.5–7 cm. lata abrupte cuspidato-acuminata, acumine obtuso, basi acuta vel obtusa vel rotundata et abrupte contracta, utrinque glabra vel ut videtur in statu juvenili subtus ad costam sparse adpresso-pilosa, nervis lateralibus utroque latere c. 7 tenerrimis obliquis infra marginem conjunctis, venulis prominulis laxissime reticulatis; inflorescentiae oppositifoliae pauciflorae, pedunculo brevissimo, pedicellis gracilibus ut videtur recurvis 2 cm. longis fere glabris; sepala late ovata obtusa sericea 2.5 mm. longa; petala viridia flavescentia linearia 3 cm. longa prope medium 2.5 mm. lata basi paullo

latura versus apicem obtusum sensim angustata sparse minute sericea.—British Honduras: Nineteen Mile, Stann Creek Valley, along creek bank in forest, altitude 75 m., June 28, 1932, *William A. Schipp* 960 (Herb. Field Mus. No. 657,797, type).

“Very rare.” Related to *D. microcarpa* Fries and *D. Maxonii* Safford, of Panama, both of which have smaller flowers and relatively broader petals.

Virola brachycarpa, sp. nov.—Arbor excelsa 12–15-metralis, trunco 22–25 cm. diam., ramulis griseis teretibus rimosis, novellis olivaceis sparse obscure tomentellis, internodiis brevibus; folia parva breviter petiolata crasse membranacea, petiolo gracili 6–9 mm. longo glabro involuto; lamina anguste oblonga vel oblanceolata-oblonga 7–14 cm. longa 1.8–4 cm. lata subabrupte longiacuminata, acumine acutiusculo, basi acuta vel acutiuscula, supra in sicco laete viridis vel fusca, glabra, costa impressa, nervis obscuris, subtus glaucescens sparsissime minute stellato-puberula vel fere omnino glabra, costa gracili elevata, nervis lateralibus utroque latere c. 12 tenerrimis prominulis obliquis, venulis obsoletis; paniculae laterales foliis duplo breviores laxae multiflorae cymoso-paniculatae, ramis patentibus vel subreflexis gracilibus sparse ferrugineo-tomentellis, floribus subumbellatis, pedicellis crassiusculis 4–5 mm. longis tomentellis; perianthium luteum sparse minutissime tomentellum vel glabratum 2–2.5 mm. longum ad medium trilobum, lobis late ovatis obtusis; fructus ovali-globosus minutissime tomentellus vel fere glaber 1.5 cm. longus et fere aequilatus basi et apice late rotundatus; semen late ovale 13 mm. longum 10 mm. latum basi et apice late rotundatum brunneum lucidum, arillo ad basin in lobos lineares semen totum involventes laciniato.—British Honduras: Stann Creek Valley, in primary advanced forest, common, January 13, 1932, *J. A. Burns* 20 (Herb. Field Mus. No. 658,854, type). Near Middlesex, mountain forest, altitude 210 m., occasional, November 22, 1929, *W. A. Schipp* 475. Big Creek, in forest, rare, December 2, *Schipp* 858.

Known as Banak or Bastard Banak. Distinguished from all the other *Virola* species known from Central America by the very small, almost glabrous leaves, and by the small fruits.

Mimosa pinetorum, sp. nov.—Herba procumbens 1.5 m. longa, caulibus gracillimis quadrangulatis ad angulos pallidis aculeis parvis c. 1 mm. longis recurvis gracilibus sparse armatis, internodiis valde elongatis; petioli graciles 1.5–3 cm. longi sparse aculeolati; pinnae unijugae c. 2.5 cm. longae inermes vel aculeolis 1–2 armatae, foliolis c. 8-jugis 10 mm. longis 3 mm. latis apice rotundatis basi obtusis brevissime petiolulatis glabris; stipulae filiformes 2.5 mm. longae persistentes; flores capitati sessiles, capitulis ut videtur paucifloris, pedunculis gracilibus glabris 1.5–2.5 cm. longis; legumen lineare 3–4.5 cm. longum 4–5 mm. latum breviter crasse stipitatum

rectum vel leviter curvum cuspidatum glabrum, marginibus dense aculeolis gracillimis rectis 1.5–2 mm. longis armatis, articulis 7–11.—British Honduras: Ravine, Mountain Pine Ridge, El Cayo District, February 21, 1931, *H. H. Bartlett 11629* (Herb. Field Mus. No. 652,461, type).

Inga Schippii, sp. nov.—Arbor 12-metralis, trunco 22 cm. diam., ramulis subteretibus densissime adpresse brunneo-tomentosis; folia majuscula breviter petiolata, petiolo cum rhachide 10–13 mm. longo gracili exalato tomentuloso, inter paria foliolorum glandula majuscula depressa onusto; foliola 4-juga breviter petiolulata oblonga vel oblanceolato-oblonga, terminalia circa 19 cm. longa et 8.5 cm. lata, inferiora minora, abrupte acuta vel breviter acuminata basi acutiuscula in sicco fusca supra tantum ad costam puberula, subtus concoloria sparse breviter pilosula vel glabrata; flores umbellati, umbellis paniculatis multifloris breviter pedunculatis, panicula 20 cm. longa et 15 cm. lata, ramis dense brunneo-tomentosis, bracteis parvis persistentibus, pedicellis gracilibus 5–8 mm. longis; calyx tubulosus 8–9 mm. longus supra vix dilatatus et 2.5 mm. latus dense adpresso-pilosulus, dentibus triangularibus acutiusculis 1–1.5 mm. longis erectis; corolla calyce vix 2 mm. longior extus dense strigosa, lobis brevibus oblongo-ovatis obtusiusculis; stamina numerosa corolla circa 1 cm. longiora.—British Honduras: Banana Bank, base of Cockscomb Mountains, altitude 150 m., in primary forest, June 10, *William A. Schipp 538* (Herb. Field Mus. No. 621,989, type).

“Rare. Flowers white, highly perfumed.” In the key to the species of *Inga* published by Britton and Rose in the *North American Flora*, this species runs at once to *I. Williamsii* Pittier, of Panama, in which the calyx is only 3.5–4 mm. long.

Cassia Bartlettii, sp. nov.—Subgenus *Chamaecrista*. Herba erecta interdum suffructicosa usque ad 1.5 m. alta rigida, ramis suberectis teretibus laevibus sparse vel densiuscule patenti-pilosa, internodiis brevibus saepe stipulis occultis; stipulae ovato-oblongae persistentes 10–14 mm. longae acutae basi breviter cordatae sessiles multistriatae glabrae longiciliatae; folia numerosa breviter petiolata, petiolo ut rhachis brevissima breviter dense piloso prope apicem glandula parva depressa onusto; foliola bijuga cuneato-oblonga vel obovato-oblonga 10–19 mm. longa 5–7 mm. lata plus minusve obliqua apice oblique rotundata sessilia basin versus paullo angustata, basi ipsa lata obtusa vel subtruncata, glabra longiuscule ciliata 4–5-nervia subtus interdum pallida vel glaucescentia; pedunculi axillares uniflori foliis longiores dense pilosi bibracteolati; sepala valde inaequalia glabra tenuiter multistriata longiacuminata, longiora 14 mm. longa; petala lutea glabra 1.5 cm. longa; legumen oblongo-lineare c. 4 cm. longum et 7 mm. latum dense fulvo-hispidum, seminibus c. 12.—British Honduras: Mountain Pine Ridge, El Cayo District, February 21, 1931, *H. H. Bartlett 11649* (Herb. Field

Mus. No. 658,353, type). Cornhouse Creek, Manatee River, Belize District, *Bartlett 11306*. North of Baldy Sibun, fairly common, *J. B. Kinloch 76*. All Pines, open places, occasional, *W. A. Schipp 557*.

A relative of *C. Desvauxii* Collad., and altogether distinct from any of the species of the so-called genus *Chamaecrista* listed for North America by Britton and Rose.

***Galactia belizensis*, sp. nov.**—Herba volubilis, caulibus gracilimis viridibus dense pilis breviusculis rigidis reflexis pilosis, internodiis elongatis; stipulae breves lineares striatae erectae; folia longipetiolata, petiolo gracili retrorso-piloso, rhachide 3–7 mm. longa, petiolulis usque ad 2 mm. longis; foliola firme membranacea ovalia vel oblongo-ovata 2–4 cm. longa 1–2.2 cm. lata apice obtusa vel rotundata et breviter mucronata, basi late rotundata, supra laete viridia ad costam sparse adpresso-pilosa aliter glabra, venulis prominulis, subtus fere concoloria dense strigosa; flores axillares fasciculati pauci vel in racemos breves paucifloros dispositi, inflorescentiis petiolis brevioribus, pedicellis gracilibus usque ad 4 mm. longis strigosis; calyx angustus 4 mm. longus dense strigosus ad medium vel profundius lobatus, laciniis subaequalibus erectis lineari-attenuatis; corolla alba 5–6 mm. longa, vexillo angusto extus glabro; legumen lineare 5-spermum c. 2.5 cm. longum et 4 mm. latum inter semina leviter impressum pilis adscendentibus molliter pilosum apice apiculatum basi breviter crasse stipitatum.—British Honduras: River bluffs, El Cayo, February 13, 1931, *H. H. Bartlett 11449* (Herb. Field Mus. No. 652,460, type).

The only other species known from the region, *G. striata* (Jacq.) Urban, has elongate many-flowered racemes and broader pods.

***Dalechampia Schippii*, sp. nov.**—Herba scandens metralis, caulibus gracillimis pilis brevibus patentibus vel subreflexis pilosis, internodiis foliis longioribus; stipulae viridescens lanceolatae 3 mm. longae; folia parva brevissime petiolata crasse membranacea, petiolo crassiusculo 3–6 mm. longo piloso; lamina oblonga 3.5–5 cm. longa 1.2–2.5 cm. lata abrupte breviter acuminata, interdum obtusa et breviter acuminata, basi subcordata, remote obscure serrulata vel prope apicem grosse serrata, utrinque breviter molliterque pilosa, trinervia, venulis subtus prominentibus atque arcate reticulatis; pedunculi axillares solitarii foliis longiores; bractae ovato-rotundatae 2–2.5 cm. longae et aequilatae apice lato breviter trilobae infra apicem sinuato-denticulatae velutino-pilosulae; pedicelli florum masculorum 5 mm. longi glabri.—British Honduras: Sarawee, pine ridge, altitude 15 m., *W. A. Schipp S181* (Herb. Field Mus. No. 652,438, type).

Bracts pink, veined with salmon. The form of the bracts is suggestive of *D. tiliifolia* Lam., a species with deeply trilobate leaves.

Phyllanthus ferax, sp. nov.—Fruticosa vel herbacea c. 60 cm. alta glabra densiuscule fere a basi ramosa, ramis gracillimis adscendentibus ferrugineis; stipulae scariosae e basi ovata anguste attenuatae; folia parva alterna breviter petiolata membranacea, petiolo gracili 1.5–2.5 mm. longo; lamina obovato-elliptica vel oblongo-elliptica 1.5–2.8 cm. longa 0.8–1.5 cm. lata apice late rotundata basi acuta supra viridis subtus glaucescens, nervis obscuris; flores monoeci solitarii vel geminati, pedicellis florum feminum 2.5–3 mm. longis, masculorum paullo brevioribus; sepala floris masculi 6 oblonga obtusa pallida 1.5 mm. longa; sepala floris femini 6 viridia late obovata 3 mm. longa apice obtusa vel rotundata sub capsulam persistentia patentia; capsula trilocularis depresso-globosa 3–3.5 mm. lata; semina fusco-brunnea laevia opaca.—Guatemala: Uaxactún, Dept. Petén, dry arroyo, March 20, 1931, *H. H. Bartlett 12157* (Herb. Field Mus. No. 652,466, type).—British Honduras: El Cayo, April 13, 1931, *Bartlett 12993*.

A well-marked species, not closely related to any of the other Central American ones.

Sebastiania longicuspis, sp. nov.—Arbor 14-metralis, trunco 25 cm. diam., omnino glabra, ramulis gracilibus ferrugineis vel brunnescentibus; folia mediocria petiolata firme membranacea, petiolo gracili 5–9 mm. longo; lamina oblonga vel anguste oblanceolata-oblonga 7–10.5 cm. longa 2.5–3.5 cm. lata apice obtusa vel subrotundata et abrupte in acumen linearem obtusum 1–1.5 cm. longum contracta, basi obtusa, laete viridis, remote obscure crenato-serrulata, margine prope basin laminae anguste revoluta; flores spicati, spicis axillaribus 3 cm. longis et ultra dense multifloris, bracteis arcte sessilibus; fructus ut videtur drupaceus 1.5 cm. diam. globosus glaber.—British Honduras: Eldorado, on hilltop in shade, altitude 120 m., September 17, 1932, *William A. Schipp 1018* (Herb. Field Mus. No. 661,010, type). Vaca, western Cayo District, in 1927, *Duncan Stevenson 2* (Yale No. 11985).—Guatemala: Cubilquitz, *Tuerckheim 8658*.

The vernacular name in British Honduras is "ridge white poison-wood." There is some doubt regarding the proper generic position of this tree, but it appears to be closely related to *Sebastiania adenophora* Pax & Hoffm., of the same region.

Buxus Bartlettii, sp. nov.—Ramuli plus minusve flexuosi, vetustiores ochracei subteretes rimosi, novelli graciles virides subquadrangulati et sulcati ad sulcos hispiduli, internodiis foliis brevioribus; folia parva breviter petiolata subcoriacea in sicco griseo-viridia, petiolo crasso 2–3 mm. longo sparse hispidulo vel glabrato; lamina anguste lanceolato-oblonga 3–5.8 cm. longa 7–10 mm. lata sensim acuminata, apice spiniformi, basi acuta vel attenuata, integra, glabra, costa supra sulcata, venulis prominulis arcte reticulatis, subtus concolor, costa valde elevata, basi trinervia, venulis prominulis arctissime reticulatis, marginibus revolutis; racemi umbelliformes

sessiles vel 3 mm. longe pedunculati multiflori densi, pedicellis florum masculorum angulatis gracilibus 2-3 mm. longis hispidulis, flore femino unico sessili, bracteis sepalis conformibus; sepala viridia 1.5 mm. longa oblongo-ovata obtusa erecta ciliolata; stamina exserta, antheris late oblongis 0.8 mm. longis; styli crassi 2 mm. longi.—British Honduras: River bluffs, El Cayo, February 13, 1931, *H. H. Bartlett 11437* (Herb. Field Mus. No. 652,455, type).

This is, apparently, the first record of the genus *Buxus* and of the family Buxaceae for Central America. The British Honduras species is closely related to *B. lancifolia* Brandege of San Luis Potosí, Mexico, the latter differing in its more congested inflorescence and broader, thinner, acuminate sepals.

Hampea euryphylla, sp. nov.—Arbor, ramis crassis tomento sordide brunneo quasi minute tuberculatis; folia magna longipetiolata crasse membranacea, petiolo crassiusculo 2.5-8.5 cm. longo dense stellato-tomentoso; lamina subreniformis usque ad rotundato-ovata 7-17 cm. longa et aequilata apice obtusa vel late rotundata et emarginata, basi breviter aperte cordata vel rarius subtruncata, 7-nervia, supra sparse minutissime stellato-puberula vel fere glabra, subtus densius pilis minutis stellatis conspersa vel interdum glabrata; flores axillares pauci fasciculati, pedicellis crassis 5-10 mm. longis vel in statu fructifero ad 2 cm. dense stellato-tomentosis; calyx late campanulatus 4 mm. longus pallide stellato-tomentosus subtruncatus vel breviter inaequaliter lobatus persistens; petala in alabastro extus tomento minutissimo lucido quasi vernicoso induta, in anthesi reflexa et c. 1 cm. longa angusta obtusa; stamina numerosissima, filamentis gracilibus glabris; capsula subglobosa sessilis 1.8 cm. longa basi et apice rotundata densissime tomento crasso plus minusve deciduo fulvo stellato induta.—British Honduras: Temash River, December 9, 1930, *H. P. Smart & N. S. Stevenson 142*; Yale No. 19793 (Herb. Field Mus. No. 633,379, type).

The proposed species is rather too closely related to *Hampea trilobata* Standl., which occurs in both Yucatan and British Honduras. The latter seems to differ constantly, however, in its longer and more slender pedicels and especially in its smaller and narrower leaf blades, truncate or rounded at the base and often shallowly lobate.

Xylosma anisophylla, sp. nov.—Arbuscula omnino glabra, ramis crassis fuscis vel ochraceis lenticellatis inermibus, novellis ferrugineis; folia mediocria coriacea breviter petiolata inaequalia interdum fasciculata, petiolo 2-4 mm. longo crassiusculo; lamina anguste oblanceolato-oblonga rhombeo-lanceolata obovata vel late elliptico-ovata usque ad 9 cm. longa vulgo 3-5 cm. longa apice obtusa vel rotundata basi anguste cuneato-attenuata vel interdum obtusa, remote adpresse crenato-serrata vel subintegra, supra lucida venis planis vel vix prominulis, subtus paullo pallidior, venulis

prominulis arcte reticulatis; flores numerosi in axillis vel ad nodos defoliatis fasciculati, pedicellis gracilibus rectis glabris 5–10 mm. longis; sepala oblonga vel lanceolato-oblonga obtusa 1 mm. longa ciliata patentia; bacca glabra subglobosa 5–6 mm. longa; semina c. 5 ferruginea.—Mexico: Tuxpeña, Campeche, November 26, 1931, *C. L. Lundell* 988 (Herb. Field Mus. No. 655,196, type); December 25, 1931, *Lundell* 1131.—British Honduras: Honey Camp, November, 1929, *Lundell* 663, 675. Cornhouse Creek, Manatee River, Belize District, January, 1931, *Bartlett* 11272.

A relative of the Mexican and Central American *X. flexuosa* (HBK.) Hemsl., which, as recently treated, is probably a collective species.

Xylosma characantha, sp. nov.—Frutex 60–90 cm. altus, ramis gracilibus flexuosis ochraceis, novellis ferrugineis dense hirtellis, internodiis foliis brevioribus; folia mediocria brevissime petiolata firme membranacea in sicco cinereo-iridida, petiolo 1.5–3 mm. longo hirtello; lamina ovata vel ovato-elliptica 5–6 cm. longa 2.5–3.3 cm. lata acuta vel breviter acuminata, acumine ipso obtuso, basi obtusa vel rotundata, supra tantum ad costam hirtella, venulis prominulis arcte reticulatis, sub lucida, subtus concolor praesertim ad venas dense hirtella, nervis lateralibus utroque latere c. 4; flores in axillis fasciculati pauci subsessiles vel vix 2 mm. longe pedicellati, pedicellis crassiusculis hirtellis; sepala patentia ovata vel triangulari-ovata 1 mm. longa obtusa ciliata extus pubescentia; bacca rubra globosa 5–6 mm. diam. interdum obtuse tuberculata dense hirtella; semina c. 3.—British Honduras: El Cayo, March 5–13, 1931, *H. H. Bartlett* 12004 (Herb. Field Mus. No. 652,459, type).—Guatemala: In jungle, Uaxactún, Dept. Petén, March 26, 1931, *Bartlett* 12334.

Related to the rather widely distributed *X. velutina* (Tul.) Triana & Karst., in which the fruit is glabrous and smooth.

Calyptanthus Bartlettii, sp. nov.—Frutex 0.5–3.5 m. altus, ramis crassis teretibus, vetustioribus cinereis rimosis, novellis dense pilis ferrugineis lucidis subpatentibus villosis, internodiis brevibus vel elongatis; folia majuscula sessilia vel subsessilia subcoriacea angustissime oblonga 8–18 cm. longa 2–4.5 cm. lata versus apicem obtusum sensim angustata, basi leviter vel profundius cordata, supra in sicco viridia lucida prope costam impressam sparse subadpresso-pilosa vel fere omnino glabra, utrinque densissime minute nigro-punctata, subtus paullo pallidiora in statu juvenili dense ferrugineo-tomentosa glabrescentia, costa crassa elevata, nervis lateralibus numerosissimis tenerrimis prominentibus angulo fere recto abeuntibus prope marginem in nervum collectivum regularem conjunctis; inflorescentiae terminales et axillares cymoso-paniculatae laxae multiflorae longipedunculatae basi trichotomae 2.5–6.5 cm. longae et aequilatae, pedunculo 2–6.5 cm. longo ut rami paniculae dense ferrugineo-tomentoso, bracteis infimis interdum magnis et foliaceis cito deciduis, floribus glomeratis sessilibus; alabastra dense

ferrugineo-tomentosa ovoideo-globosa obtusa vel acutiuscula 4 mm. longa; petala ut videtur nulla, staminibus numerosissimis, antheris minutis; bacca atrorubra globosa dense minute hirtella vel glabrata c. 1 cm. diam.; semina 1-3 lucidissima brunnescentia 6 mm. longa obtuse angulata vel subglobosa.—British Honduras: Along stream, Mountain Pine Ridge, El Cayo District, February 27, 1931, *H. H. Bartlett 11837* (Herb. Field Mus. No. 658,351, type); May 7, 1931, *Bartlett 13059*. On gravel and ledges, Monkey Falls, El Cayo, February 13, 1931, *Bartlett 11458*.

A well-marked species, remarkable for its abundant rusty pubescence and especially for the narrow, greatly elongate leaves with sessile cordate bases.

Eugenia belizensis, sp. nov.—Frutex 3-metralis omnino glaber, ramis gracillimis teretibus brunnescentibus, internodiis brevibus; folia parva breviter petiolata subcoriacea, petiolo crassiusculo 3-5 mm. longo; lamina lanceolato-linearis vel oblongo-linearis 4-5 cm. longa 5-10 mm. lata versus apicem obtusum longe sensimque attenuata basi acuta, supra in sicco cinereo-viridis, costa subimpressa, nervis obsoletis, utrinque dense minute punctata, subtus fere concolor, costa pallida gracili valde elevata, nervis numerosis obliquis tenerrimis; flores ut videtur solitarii longipedicellati axillares, pedicellis gracilibus 7-10 mm. longis; bacca globosa glabra 7 mm. diam.—British Honduras: Along brook, Mountain Pine Ridge, El Cayo District, February 25, 1931, *H. H. Bartlett 11756* (Herb. Field Mus. No. 658,352, type).

Although known only from unsatisfactory material of a single collection, this plant is clearly distinct from any other *Eugenia* known from northern Central America. It is easily recognized by its small and remarkably narrow leaves.

Eugenia Schippii, sp. nov.—Frutex vel arbor usque ad 9 m. alta, trunco 15 cm. diam., omnino glabra; folia majuscula brevissime petiolata subcoriacea minutissime puncticulata, petiolo crasso 3-6 mm. longo; lamina oblonga vel elliptico-oblonga 7-13 cm. longa 2-5 cm. lata sensim vel subabrupte acuminata vel acuta, acumine ipso obtuso vel acutiusculo, basi acuta vel obtusa, supra in sicco olivacea, costa impressa, nervis obsoletis, subtus multo pallidior, costa prominente, nervis lateralibus numerosis tenerrimis fere occultis; flores solitarii vel fasciculati(?) axillares, interdum e nodis defoliatis nascentes, pedicellis crassis 2-11 mm. longis rectis; sepala ad apicem baccae persistentia rotundata vel late ovata apice rotundata vel obtusissima c. 2 mm. longa; bacca nigra globosa 10-12 mm. diam.—British Honduras: Seine Bight, open forest, occasional, November 26, *William A. Schipp 669*; November 6, *Schipp S141*. Little Mountain Pine Ridge, El Cayo District, May, 1931, *Bartlett 13060*.

Miconia ochroleuca, sp. nov.—Arbor 7.5 m. alta, trunco 7.5 cm. diam., ramulis gracilibus ochraceis, novellis olivaceis glabris vel minute obscure furfuraceis, internodiis elongatis; folia mediocria breviter petiolata membranacea, petiolo gracili glabro 7–9 mm. longo; lamina lanceolato-oblonga vel elliptico-oblonga 9–12.5 cm. longa 3.5–5 cm. lata longiuscule obtuso-acuminata vel interdum abrupte breviterque cuspidata basi acuta vel obtusa integra supra in sicco luteo-viridis glabra costa impressa, subtus paullo pallidior glabra vel primo tantum ad costam elevatam obscure minute furfuracea, triplinervia, nervis lateralibus prope basin laminae nascentibus, venis vix prominulis laxè reticulatis, marginibus leviter revolutis; paniculae terminales parvae pyramidales 5–8 mm. longe pedunculatae circa 4 cm. longae et aequilatae, ramis obscure minute furfuraceis vel fere glabris, infimis adscendentibus gracilibus, floribus racemose dispositis sparsis vix 1 mm. longe pedicellatis; calyx anguste campanulatus extus minute furfuraceus vix 2.5 mm. longus supra dilatatus, limbo 2 mm. lato remote minutissime obtusodenticulato; petala ochroleuca obovata 2 mm. longa apice rotundata; stamina longe exserta, antheris paullo inaequalibus anguste linearibus, longioribus 2.2 mm. longis poris parvis obliquis dehiscentibus; stylus gracilis glaber 5–6 mm. longus.—British Honduras: Middlesex, in forest, altitude 60 m., rare, November 20, 1929, *William A. Schipp* 407 (Herb. Field Mus. No. 606,832, type).

Jacquinia paludicola, sp. nov.—Frutex 3-metralis, trunco 5 cm. diam., omnino glaber, ramulis gracillimis; folia majuscula subcoriacea vel crasse membranacea breviter petiolata pseudoveriticillata, petiolo gracili 3–5 mm. longo; lamina oblanceolato-oblonga 8–12 cm. longa 2.5–3.5 cm. lata sensim acuminata, apice mucrone debili onusta, basin versus sensim attenuata, costa supra impressa subtus elevata; flores pauci umbellati vel umbellatim racemosi, umbellis c. 8-floris breviter pedunculatis, pedicellis gracilibus 5–14 mm. longis; sepala orbicularia 2 mm. longa apice late rotundata; corolla alba 6 mm. longa, lobis rotundatis tubo crasso duplo brevioribus; staminodia petalis duplo breviora apice late rotundata subintegra; stylus attenuatus crassiusculus 2 mm. longus.—British Honduras: Forest Home, swampy forest, altitude 60 m., September 11, 1932, *William A. Schipp* 1028 (Herb. Field Mus. No. 661,014, type).

Noteworthy for the large and unusually thin leaves, with only weakly pungent tips; also for the remarkably small, pale flowers.

Strychnos panamensis Seem., var. *hirtiflora*, var. nov.—Ut videtur a forma typica non nisi corolla extus sparse hirsuta, lobis corollae densius adpresso-hispidulis distinguitur.—British Honduras: Nineteen Mile, Stann Creek Valley, in dense forest, altitude 105 m., July 2, 1932, *William A. Schipp* S301 (Herb. Field Mus. No. 657,775, type).

A vine 10 m. long, the stem 2.5 cm. in diameter; flowers cream-colored. In the typical form of the species, which ranges from British Honduras and Guatemala to Panama, the corolla is glabrous or pruinose-puberulent.

Fischeria Briquetiana, sp. nov.—Volubilis, caulibus teretibus dense puberulis et sparse hirsutis, internodiis elongatis; folia opposita mediocria membranacea longipetiolata, petiolo usque ad 7 cm. longo puberulo et hirsuto; lamina late elliptica vel ovato-elliptica 7–14 cm. longa 3.5–9.5 cm. lata apice obtusa vel rotundata et breviter caudata, acumine angusto 3–4 mm. tantum longo, basi breviter anguste cordata, lobis brevibus rotundatis, supra brevissime asperule hirsutula, subtus fere concolor dense breviter velutino-pilosula; inflorescentiae axillares racemosae 5–8 cm. longe pedunculatae multiflorae, pedicellis gracilibus 12–25 mm. longis viscido-puberulis et sparse hirsutis; alabastra ovoideo-globosa obtusissima; sepala lanceolato-lineariter longiattenuata 7–9 mm. longa corolla paulo longiora viscido-puberula et sparse hirsuta; corolla 12–15 mm. lata profunde 5-loba, lobis ovatis obtusis crispis utrinque dense hirtellis; corona exterior carnosae integra gynostegio duplo brevior, interior e lobis carnosae obtusis gynostegio longioribus composita.—British Honduras: Nineteen Mile, Stann Creek Valley, along creek banks in partial sunlight, a vine 9 m. long, very rare, June 25, 1932, *William A. Schipp* 962 (Herb. Field Mus. No. 657,804, type).

Flowers highly perfumed, light green and yellow. Related to *F. funebris* (Donn. Smith) Blake, a common species of Central America, in which the leaves are conspicuously hirsute, especially on the nerves, the corolla larger, and the sepals much more elongate. At the request of the collector, the species is named for the late Dr. John I. Briquet.

Ipomoea aphylla, sp. nov.—Herba glabra perennis ut videtur suberecta e basi dense ramosa, caulibus usque ad 1 m. longis gracilibus sed subrigidis teretibus in sicco cinereo-viridibus subaphyllis; folia squamiformia subulata pauca c. 1 mm. longa acuta; pedunculi axillares 1–2 cm. longi apice bibracteati, bracteis subulatis 1–2 mm. longis, pedicellis patentibus vel subreflexis c. 1 cm. longis superne paulo incrassatis; sepala valde inaequalia oblonga exteriora obtusa interiora acutiuscula vel apiculata 8–10 mm. longa subcoriacea; corolla alba 2.5 cm. longa; stylus filiformis elongatus, stigmatibus breviter bilobis, lobis subglobosis; capsula subglobosa 7 mm. longa; semina dense pilosa.—British Honduras: Pine ridge, Cornhouse Creek, Manatee River, Belize District, January 31, 1931, *H. H. Bartlett* 11316 (Herb. Field Mus. No. 658,359, type). All Pines, open places, rare, July 18, *W. A. Schipp* 547.

A most curious plant, strikingly unlike any other species known to the writer. It is remarkable for its somewhat broomlike habit, and almost complete reduction of the leaves.

Jacquemontia Houseana, sp. nov.—Herba volubilis, caulibus gracillimis densiuscule stellato-pilosulis, internodiis valde elongatis; folia mediocria petiolata herbacea, petiolo gracili 0.7–1.5 cm. longo stellato-piloso; lamina late ovata vel ovato-elliptica 2.5–4.5 cm. longa 1.5–3 cm. lata abrupte breviter angustaque acuminata basi breviter vel profunde cordata sinu lato lobis late rotundatis, utrinque dense molliter stellato-pilosula; cymae dense multiflorae capituliformes 2.5 cm. latae, pedunculo usque ad 10 cm. longis, floribus sessilibus congestis, bracteis ovatis sepalis aequilongis; sepala ovata vel late ovata 6–8 mm. longa sensim acuminata vel longiacuminata dense stellato-tomentosa; corolla caerulea extus glabra, limbo fere 2 cm. lato.—British Honduras: El Cayo, April 13, 1931, *H. H. Bartlett 12928* (Herb. Field Mus. No. 652,458, type).

Related to the ligneous-stemmed *J. abutiloides* Benth. of north-western Mexico.

Petrea arborea HBK., f. *albiflora*, f. nov.—A forma typica calyce ut quoque corolla albo recedit.—British Honduras: River bank, Sittee River, March 17, 1932, *William A. Schipp 727* (Herb. Field Mus. No. 659,053, type).

In the usual form of the purple-wreath, a common vine of tropical America that often is cultivated for ornament outside its natural range, the flowers are of a handsome blue color. I do not recall any mention of a white-flowered form, although such a variant was to be expected. The usual form of this plant is one of the handsomest of tropical American shrubs, and it is to be assumed that the white-flowered form likewise must be in no manner inferior to it in beauty, and well worthy of introduction into cultivation.

Bacopa lacertosa, sp. nov.—Herba perennis 30–60 cm. alta erecta, caule simplici vel supra ramos paucos breves adscendentes emittente subtereti glabro vel supra in partibus novellis sparse brevissime villosulo, internodiis foliis brevioribus; folia opposita sessilia carnosa rigida linearia plerumque 3–5 cm. longa 2–4 mm. lata apicem versus longe attenuata basin versus sensim attenuata crenato-serrata glabra minute densiuscule punctata; flores axillares solitarii, pedicellis usque ad 3 mm. longis crassiusculis sparse pilosulis vel fere omnino glabris supra medium bibracteolatis, bracteolis subulatis 1–2 mm. longis; sepala valde inaequalia, 3 exterioribus foliaceis 5–7 mm. longis late ovatis acutis vel obtusis basi rotundatis vel truncatis palmatinerviis scaberulo-ciliatis glanduloso-puncticulatis extus sparse minute pilosulis vel fere glabris, 2 interioribus angustis carinatis; corolla alba breviter exserta; capsula ovoidea 4 mm. longa inclusa versus apicem attenuata.—British Honduras: All Pines, in swamp, April 29, *William A. Schipp 763* (Herb. Field Mus. No. 641,525, type).

In general appearance as well as in floral characters the plant resembles *Bacopa aquatica* Aubl., in which the flowers are borne on elongate pedicels.

***Bacopa naias*, sp. nov.**—Herba aquatica perennis c. 30 cm. longa, caulibus simplicibus adscendentibus teretiusculis fere 2 mm. crassis striatis dense foliatis, nodis brevibus, superioribus sparse minute puberulis; folia opposita sessilia amplexicaulia tripartita 1 cm. longa flaccida patentia, segmentis pinnatifidis, segmentis ultimis graciliter filiformibus; flores axillares solitarii, pedicellis gracilibus 2.5–6 mm. longis sparse minute puberulis vel fere glabris, floriferis adscendentibus, fructiferis reflexis, ebracteolatis; sepal viridescencia linearia obtusiuscula 3 mm. longa erecta; corolla caerulea, fauce lutea, glabra c. 4 mm. longa; capsula oblonga 2 mm. longa.—British Honduras: All Pines, swampy places, common, September 1, *William A. Schipp* 610 (Herb. Field Mus. No. 621,977, type).

A relative of the Brazilian *Bacopa reflexa* (Benth.) Edwall, but differing from that and related species by the extremely short pedicels. A West Indian relative of *Bacopa naias* is the following:

***Bacopa longipes* (Pennell), comb. nov.** *Naiadothrix longipes* Pennell, Mem. Torrey Club 16: 105. 1920.

***Petastoma caudiculatum*, sp. nov.**—Frutex alte scandens usque ad 10 m. longus praeter flores omnino glaber, ramulis quadrangulatis ochraceis rimosis; folia 2–3-foliolata interdum cirrhifera, petiolo gracili rigido 2–2.5 cm. longo; foliola subaequalia membranacea lucida in sicco brunnescentia 1–2 cm. longe petiolulata elliptico-oblonga vel late lanceolato-oblonga 4–12 cm. longa 2–6 cm. lata abrupte vel rarius sensim longiacuminata, acumine ipso sub-obtus, basi obtusa vel interdum subcordata integra, nervis venulisque supra prominulis et pulchre reticulata, subtus vix pallidiora, costa gracili elevata, venulis prominentibus reticulatis; inflorescentia cymoso-paniculata foliis vix longior longe graciliter pedunculata laxissime multiflora, bracteis minutis lanceolatis vel subulatis, pedicellis gracillimis glabris plerumque 4–5 mm. longis; calyx fere rotatus extus sparse minutissime puberulus vel glabratus 6–7 mm. latus orbicularis remotissime 5-denticulatus, dentibus triangulari-filiformibus vix 1 mm. longis; ovarium anguste ovoideum glabrum 1.5 mm. longum, stylo gracili glabro 15 mm. longo; capsula (perfecta non visa) linearis valde compressa ultra 16 cm. longa 1.5 cm. lata glabra lucida.—British Honduras: Nine Mile, Stann Creek Railway, altitude 30 m., in low swamp forest, rare, March 22, 1932, *William A. Schipp* S297 (Herb. Field Mus. Nos. 657,811–812, type).

While this plant is properly referable with scarcely any doubt to the genus *Petastoma*, the calyx is conspicuously unlike that of other members of the group occurring in Mexico and Central

America. The collector states that the corolla is white and about 2.5 cm. long, but no corollas are present upon the type specimen.

Mendoncia belizensis, sp. nov.—Volubilis 18-metralis herbacea, caulibus gracilibus dense pilis longis fulvis subadpressis pilosis, internodiis foliis longioribus; folia opposita mediocria membranacea breviter petiolata, petiolo crassiusculo 7–10 mm. longo dense piloso; lamina elliptica, oblongo-elliptica vel ovata 6–9 cm. longa 3–5 cm. lata subabrupte acuminata, acumine triangulari attenuato, basi rotundata, utrinque dense molliter fulvo-pilosa, pilis subpatentibus vel ad nervos subadpressis, illis paginae superioris basi dilatatis, nervis lateralibus utroque latere 4–5 valde obliquis subtus elevatis; pedunculi axillares solitarii uniflori 2.5–3 cm. longi dense pilis longis adscendentibus fulvis pilosi; bracteae anguste lanceolato-oblongae subfalcatae 3 cm. longae fere 1 cm. latae attenuato-acuminatae uninerviae dense subadpresse longipilosae; corolla coccinea extus glabra tubo crasso 4 cm. longo 6–7 mm. lato, lobis ovalibus vel rotundatis 4–5 mm. longis suberectis; fructus juvenilis dense hirtellus. —British Honduras: Nineteen Mile, Stann Creek Valley, climbing over forest tree on mountain slope, June 16, 1932, *William A. Schipp* 961 (Herb. Field Mus. No. 657,807, type).

This is apparently the northernmost station known for a plant of this curious genus.

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STUDIES OF AMERICAN PLANTS—VI

BY

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STUDIES OF AMERICAN PLANTS—VI

PAUL C. STANDLEY

Like some of the former papers of this series, the present one is devoted principally to studies of tropical American and especially South American Rubiaceae. During past years the writer has been fortunate in having temporarily for study several thousand sheets of South American plants of this family, lent to Field Museum of Natural History by European herbaria.

The most important of these sendings came from the Delessert Herbarium of Geneva, through the kindness of Dr. J. I. Briquet. This loan consisted largely of material already more or less critically determined, and while it did not reveal many novelties, it supplied numerous species that the writer never had seen previously, and consequently it facilitated a more accurate determination of certain material in the herbarium of Field Museum and of that received from other institutions.

Other sendings of large extent were received, as noted in the last preceding paper of the present series, from the following European herbaria: Botanical Garden and Museum, Berlin-Dahlem, through the courtesy of the Director, Dr. L. Diels, and of Dr. K. Krause, custodian of the Rubiaceae of the Berlin Museum; Riksmuseet, Botaniska Afdelning, Stockholm, lent by Dr. Gunnar Samuelsson; Museum of Natural History, Paris, through the Director; Jardin Principal Botanique, Leningrad, submitted by the Director, and through the interest of Dr. Georges Woronow; Royal Botanic Gardens, Kew, transmitted by the Director, Sir Arthur W. Hill. These loans were composed almost wholly of undetermined Rubiaceae, and they amounted to many hundreds of sheets. Although consisting largely of recent collections, they included, especially the shipments from Leningrad, Kew, and Paris, innumerable old specimens, some of which were collected more than a century ago. These, after having remained so long without critical attention, were found to be almost as rich in new species as the more recent collections submitted by Stockholm and Berlin.

To the curators of the herbaria mentioned the writer wishes to express his sincere thanks for the loan of so much valuable and taxonomically interesting material, whose shipment to Chicago involved a great amount of clerical and other labor. This, it is to

be hoped, has been repaid in part by the determinations added to the sheets. The loans are an illustration of the fine spirit of cooperation shown in recent years by the curators of European herbaria to American students of the tropical American flora.

There have been received from the United States National Herbarium, through Dr. William R. Maxon and Ellsworth P. Killip, duplicates and unique specimens obtained by various recent expeditions, which, naturally enough, contained Rubiaceae that were new or otherwise important. The collection richest in this respect was the one made recently in Brazil and Venezuela by E. G. Holt.

Further study of the Peruvian series of Dr. A. Weberbauer, G. Tessmann, and Llewelyn Williams has discovered additional new species of Rubiaceae, especially from the Amazon Valley. Evidently that region of Peru is still far from exhaustion botanically. Likewise, the older collections procured in Colombia by Triana, Goudot, and others have added to the list of Rubiaceae already published for that country by the writer.

Whoever inspects the two unwieldy volumes of the *Flora Brasiliensis* that are devoted to the Rubiaceae may believe that the rubiaceous flora of Brazil is well known, but the extensive recent gatherings from that country represented at Stockholm, Kew, Berlin, and elsewhere, lead one to suspect that the end is not yet in sight. Western Brazil, still practically unknown, undoubtedly will add hundreds of undescribed Rubiaceae to embarrass the student of the Brazilian flora.

The relatively few pages devoted here to plants other than Rubiaceae are occupied with notes and descriptions of plants of miscellaneous groups. A number of new Peruvian Amaranthaceae are described.

GRAMINEAE

Luziola Spruceana Benth.—This aquatic grass has not been reported from Central America or from continental North America. A single collection has been seen by the writer: Honduras: Lake Yojoa, Pito Solo, alt. 600 meters, growing in 1 meter of water, *J. B. Edwards* AQ⁴.

CYCLANTHACEAE

Carludovica Williamsii, sp. nov.—Terrestris; folia graciliter petiolata, lamina basi acute attenuata fere ad basin bifida, segmentis linearibus integris longe attenuatis 35–40 cm. longis 1–1.5 cm. latis

suberectis c. 8-nerviis et valde plicatis, lamina simplicinervia; pedunculus gracilis 20 cm. longus et ultra rectus vel paullo flexuosus; spathae 2 c. 7 cm. longae oblongo-lanceolatae longiattenuatae; spadix parvus oblongus crasse 5–8 mm. longe stipitatus c. 2 cm. longus et 8 mm. latus pauciflorus.—Peru: San Roque, Dept. San Martín, alt. 1,400 meters, January 16, 1930, growing in humid loam on stream banks, the plants about 45 cm. high, *Llewelyn Williams 7477* (herb. Field Mus. No. 621,023, type).

Vernacular name, “yacu-sisa.”

BROMELIACEAE

Pitcairnia puyoides L. B. Smith, sp. nov., e fragmentis solum cognita, valida, verisimiliter plus quam metralis: foliis 9 dm. longis; vagina late ovata, 7 cm. longa, atro-castanea, lucida, supra glabra, subtus dissite minuteque sordido-floccosa; lamina lineari-lanceolata, acuminata, 33 mm. lata, ad basin versus paulo attenuata sed vix petiolata, spinis rectis gracilibus atro-castaneis ad 3 mm. longis dense armata, pungenti, mox glabra: scapo erecto, 15 mm. diametro, subglabro; scapi bracteis suberectis, foliaceis, densissime imbricatis: inflorescentia composita, minutissime floccosa, mox glabra: racemis laxe florigeris, 15–21 cm. longis; rhachi valida, ea racemorum lateralium ad basin versus valde complanata; bracteis florigeris ovatis, acuminatis, quam pedicelli subduplo brevioribus; floribus suberectis vel divergentibus; pedicellis gracilibus, 15–20 mm. longis; sepalis asymmetricis ovatis, acutis, 24 mm. longis, 8 mm. latis, crasse coriaceis; petalis ligulatis, 6 cm. longis, nudis, lacteis; staminibus inclusis; ovario pyramidato, $\frac{2}{3}$ supero; ovulis caudatis.—Peru: San Martín, epiphytic in forest, Zepelacio, near Moyobamba, alt. 1,200–1,600 meters, 1934, *Klug 3547* (Gray Herb., type).

In Mez's key to *Pitcairnia* in the *Pflanzenreich* this species comes next to *P. tarapotensis*, but is utterly different in floral details and in habit. In fact, the stout habit, coarse broad sepals, and large whitish petals are much more reminiscent of the genus *Puya* than of a typical *Pitcairnia* like *P. tarapotensis*. However, the partially inferior ovary and caudate-appendaged ovules place it definitely in *Pitcairnia*.

PIPERACEAE

Piper san-juanum Trelease, sp. nov.—Frutex?, internodiis fertilibus brevibus et crassiusculis laxe pallido-villosis; folia oblique lanceolato-elliptica acute acuminata, basi inaequilatera et obtusa vulgo uno latere cordulata, 12–16 cm. longa 4–6.5 cm. lata e dimidio inferiore penninervia, rugosa, supra basibus pilorum mollium alborum scabra, nervis subtus hirsutis; petiolus 1 cm. longus subtus villosus, tantum ad basin vaginans; spicae 80–90 mm. longae 3 mm. crassae acuminatae pallidae; pedunculus fere nullus 2 mm. longus et 2 mm. crassus plus minusve pilosus; bractee rotundato-subpeltatae;

baccae oblongae; stigmata 3, minuta.—Salvador: San Juan de Tepezontes, in 1929, *Dr. Salvador Calderón 2539* (herb. Field Mus. No. 603,261, type).

Piper tepezontesense Trelease, sp. nov.—Frutex?, plus minusve nodosus, nervis subtus puberulis exceptis glaber, internodiis fertilibus subgracilibus breviusculis; folia elliptica subcaudato-acuminata basi acuta, 12–15 cm. longa 5–7.5 cm. lata, e dimidio inferiore penninervia, in statu sicco modice tenuia et obscure rugosa, supra lucido-viridia subtus pallidiora; petiolus circa 10 mm. longus tantum ad basin vaginans striato-puberulus; spicae 80–120 mm. longae 3 mm. crassae, acuminato-mucronatae; pedunculi breves vix 5 mm. longi; bractee lunulato-subpeltatae; baccae subquadratae umbilicatae; stigmata 3 sessilia.—Salvador: San Juan de Tepezontes, in 1929, *Dr. Salvador Calderón 2543* (herb. Field Mus. No. 603,259, type); also No. 2541 from the same locality.

OLACACEAE

Heisteria eurycarpa, sp. nov.—Frutex omnino glaber, ramulis gracillimis subteretibus brunneis, internodiis 1.5–3 cm. longis; folia parva petiolata tenuiter coriacea lucida, petiolo gracili 7–10 mm. longo; lamina elliptica vel oblongo-elliptica 4–9 cm. longa 2.5–4 cm. lata abrupte anguste acuminata, acumine attenuato obtuso, basi rotundata vel obtusa, supra in sicco luteovirens, venis prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 5–6 gracilibus prominentibus angulo semirecto adscendentibus arcuatis remotiuscule a margine conjunctis, nervulis prominulis arcte reticulatis; flores in axillis dense fasciculati numerosi, pedicellis crassiusculis 2–4 mm. longis (in statu fructifero usque ad 12 mm.); calyx c. 1 mm. latus 5-dentatus, dentibus triangularibus acutis; corolla in alabastro globoso-ovoidea apice late obtusa; calyx fructifer ut videtur viridis abrupte reflexa et campanuliformis 7–10 mm. longus breviter 5-lobus, lobis late triangularibus obtusis; drupa depresso-globosa in sicco brunnea lucida c. 11 mm. lata et 8 mm. alta, apice subtruncata, fere laevis.—Peru: La Victoria, on the Amazon River, Dept. Loreto, in forest, August 23, 1929, *Llewelyn Williams 2719* (herb. Field Mus. No. 616,865, type).

Because of the form of its fruit, this Peruvian plant is clearly a relative of *Heisteria pallida* Engler, which was described from Tarapoto. In that species the leaves are acute at the base, the pedicels in flower are 5–10 mm. long, and the fruit is globose.

POLYGONACEAE

Coccoloba Williamsii, sp. nov.—Arbor vel arbuscula, ramulis crassis pallidis teretibus, internodiis brevibus glabris; ochreae amplae plus minusve pubescentes usque ad 3 cm. longae; folia magna subcoriacea, petiolo 0.8–3 cm. longo minute puberulo vel glabro; lamina ovalis, oblongo-ovalis vel oblongo-elliptica 12–20 cm. longa 7–12 cm. lata, apice obtusa vel rotundata et interdum breviter

acuminato-producta, rarius acuta, basi plus minusve obliqua rotundata et interdum breviter emarginata, rare obtusa vel acutiuscula, supra in sicco fusca glabra venulis vix prominulis arcte reticulatis, subtus fere concolor ad costam nervosque puberula vel serius fere omnino glabra, nervis valde elevatis angulo 45–60° abeuntibus, venulis prominulis arctissime reticulatis; inflorescentia simplex breviter pedunculata 20–25 cm. longa nodulis 1–3-floris, rhachi dense puberula vel pilosa, bracteis c. 2 mm. longis, ochreolis bilobis 2.5–3 mm. longis, pedicellis in anthesi ochreolis brevioribus, in statu fructifero usque ad 4.5 mm. longis; fructus purpureus late ovoideoglobosus 5–6 mm. diam., lobis late ovatis accrescentibus perianthii inclusus.—Peru: Lower Río Huallaga, Dept. Loreto, alt. 200 meters, in 1929, *Llewelyn Williams 4803* (herb. Field Mus. No. 626,525, type). Yurimaguas, in forest, *Williams 4597*; *Killip & Smith 28304*. Lower Río Nanay, *Williams 673*. Caballo Cocha, in forest, *Williams 2423*.

“Palo meta-caspi, Tangarana mashau.” Reported by Killip and Smith as a scandent shrub. Related to *C. caracasana* Meissn., a species of the northern coast of South America, and of Central America.

Eriogonum hieracifolium Benth. f. **atropurpureum**, forma nov.—A forma typica non nisi perianthio atropurpureo differt.—Texas: Chisos Mountains, August 23, 1931, *C. H. Mueller 7977* (herb. Field Mus. No. 655,295, type).

In the typical form of the species, represented by *Mueller 7978* from the same locality, the perianth is bright yellow. The collector reports that in the Chisos Mountains the dark-flowered form is the more common one.

AMARANTHACEAE

Amaranthus Haughtii, sp. nov.—Herba annua erecta stricta 20–60 cm. alta fere omnino glabra, ramis paucis suberectis crassiusculis pallidis; folia tenuia pallide viridia longipetiolata alterna, petiolo gracillimo 1–3 cm. longo; lamina lanceolato-linearis usque ad ovato-elliptica vulgo 2.5–7 cm. longa 4–18 mm. lata, apice obtusa vel apicem anguste rotundatum versus sensim angustata, spinuloso-mucronata, basi acuta vel saepius basin versus longe sensim attenuata, praecipue subtus albido-puncticulata, nervis subtus prominentibus paucis pallidis, marginibus saepe plus minusve crispatis vel undulatis; flores dioeci glomerati, glomerulis parvis multifloris sessilibus axillaribus et quoque in spicas terminales densas usque ad 5 cm. longas et 4–7 mm. latas dispositis; bractee ovatae acutae vel acuminatae spinuloso-mucronatae, vulgo sepalis femineis breviores, sepalis masculis aequilongae vel paullo longiores; sepala floris sepalis 5 oblonga acuta vel breviter acuminata hyalina saepe mucronata fere 2 mm. longa; sepala floris feminei 5 late obovato-spathulata 2–2.5 mm. longa scariosa pinnatinervia apice late rotun-

data vel subtruncata supra extrorsum curvata, inferne urceolata, nervis viridibus; utriculus compresso-globosus sepalis multo brevior laevis apice tridentatus prope medium circumscisse dehiscens; semen fusco-brunneum compressum lucidum fere 1 mm. diam.—Peru: Pariñas Valley, Dept. Piura, March 18, 1929, *Oscar Haught F147* (herb. Field Mus. No. 589,332, type), *F148*; 221 and 227 (U. S. Nat. Herb.). Talara, Dept. Piura, along sandy draws and on cliff talus, October, 1925, *Ivan M. Johnston 3509*. Without locality, *Weberbauer 5960*.

The plant is not closely related to any other species known from South America. Its affinities are with *Amaranthus Torreyi* (Gray) Benth., of the western United States.

Gomphrena oroyana, sp. nov.—Planta nana perennis e radice crassa elongata verticali e basi multiramosa, caulibus 2–5 cm. longis gracilibus ut videtur adscendentibus densiuscule foliatis pilis longissimis laxis albis adscendentibus dense pilosis; folia radicalia longe petiolata, lamina obovata c. 12 mm. longa glabrata obtusa vel acutiuscula viridi; folia caulina parva subpatentia petiolata, petiolo 2–3 mm. longo amplexicauli marginato, lamina elliptico-oblonga usque ad late ovata, elliptica vel rotundato-ovata 3–6 mm. longa et saepe fere aequilata, obtusa vel acutiuscula, basi acuta vel interdum rotundata, supra pallide viridi primo sparse pilosa mox glabrata, subtus pilis longis albis laxis sparse pilosa vel cito glabrata, crassiuscula, nervis obscuris vel obsoletis; capitula terminalia multiflora densa alba vix nitentia subglobosa et c. 8 mm. lata brevissime pedunculata basi nuda, pedunculo vulgo 2–5 mm. longo; bracteae late ovatae acutae vel obtusae hyalinae glabrae albae; bracteolae sepalis aequilongae late ovatae concavae obtusae hyalinae albae glabrae; sepala 3 mm. longa ovato-oblonga obtusa diaphana alba subnervia supra glabra prope basin dense lanata; androecium sepalis fere aequilongum, tubo staminum elongato, filamentis triangulari-oblongis tubo fere aequilongis, lobis lateralibus obsoletis.—Peru: Vicinity of Oroya, A. S. Kalenborn 89 (U. S. Nat. Herb., type; fragm. in herb. Field Mus.). Oroya, November, 1924, *F. L. Stevens 6* (U. S. Nat. Herb.).

An outstanding species, not very closely related to any other of the Andean region. It bears a slight resemblance to *G. Meyeniana* Walp., but that has scapose stems.

Alternanthera asterophora, sp. nov.—Frutex 2-metralis ramosus, ramis crassiusculis teretibus dense stellato-tomentosis, tomento adpresso fulvo vel lutescente, internodiis elongatis; folia majuscula petiolata, petiolis gracilibus plerumque 1–1.5 cm. longis tomentosis; lamina late ovata, late elliptica vel rotundato-ovata 3–6.5 cm. longa 2–6 cm. lata, apice obtusa, rotundata vel rarius acutiuscula, basi acuta usque ad truncata, utrinque subtus densius stellato-tomentosa, supra interdum glabrata, tomento e pilulis stellatis vel hispidulis lutescentibus subadpressis composito, nervis

subtus prominentibus gracilibus; capitula straminea laxe paniculata nuda globosa vel breviter oblonga 12–15 mm. lata terminalia, pedunculis rigidis rectis trifidis, capitulis 1–2 cm. longe pedunculatis; bracteae et bracteolae sepalis triplo breviores late ovatae obtusae vel acutae pilosulae vel glabratae; flores breviter stipitati, stipite c. 1 mm. longo piloso; sepala 5–6 mm. longa anguste oblonga versus apicem obtusum angustata apiculata tenuiter pilosa vel supra glabrata trinervia, marginibus tenuibus pallidis; staminodia filamentis longiora ligulata apice laciniato-dentata.—Peru: Valley of Río Mantaro below Colcabamba, Dept. Huancavelica, alt. 1,700–1,800 meters, May, 1913, A. Weberbauer 6464 (herb. Field Mus. No. 621,515, type; duplicate in U. S. Nat. Herb.).

A member of the subgenus *Mogiphanes*, but unique in its close dense pubescence of yellowish, stellate or hispidulous hairs.

Alternanthera calcicola, sp. nov.—Herba perennis basi suffruticosa ramosa, ramis brevibus et suberectis vel elongatis et procumbentibus subrigidis dense stellato-tomentosis vel serius glabratibus, internodiis brevibus vel elongatis; folia crassa subsessilia vel usque ad 3 mm. longe petiolata, lamina lanceolato-oblonga usque ad rotundato-elliptica 8–22 mm. longa 3–13 mm. lata apice obtusa vel rotundata basi acutiuscula vel rotundata et abrupte decurrente, utrinque subtus densius stellato-tomentosa, tomento albido adpresso, nervis obscuris, marginibus saepe revolutis; capitula stramineo-alba globosa vel breviter oblonga 6 mm. lata, terminalia plerumque triglomerata et sessilia, glomerulis paucis usque ad 4 cm. longe pedunculatis sed vulgo pedunculis c. 5 mm. longis stipatis, nudis; bracteae et bracteolae sepalis vix breviores glabrae ovatae acuminatae et saepe mucronatae albae, interioribus paullo angustioribus; sepala glabra 2.5 mm. longa vel paullo ultra ovato-oblonga alba obtusa vel acutiuscula et brevissime mucronulata, supra valde costata, inferne obscure tricostulata; staminodia filamentis longiora ligulata apice profunde laciniata.—Peru: La Oroya, Dept. Junín, alt. 3,600 meters, on limestone cliff ledges, May–June, 1922, *Macbride & Featherstone* 944 (herb. Field Mus. No. 517,472, type; duplicate in U. S. Nat. Herb.). Huariaca, 2,850 meters, shrubby canyon side, *Macbride* 3110.

The relationship of this species is probably with *Alternanthera paniculata* HBK., but that is a larger plant with paniculate heads, and with altogether different pubescence.

Alternanthera Macbridei, sp. nov. *Telanthera lupulina* Moq. in DC. Prodr. 13, pt. 2: 374. 1849, as to description, excluding most of the synonymy, not *Alternanthera lupulina* HBK. *Achyranthes lactea* Pavón ex Moq., loc. cit. in syn.

Peru: Chinchao, *Ruiz & Pavón* (photo. of specimen of *A. lactea* ex. herb. Berol.). La Oroya, *Macbride & Featherstone* 967; *Rose* 18704 (U. S. Nat. Herb.); *Kalenborn* 121 (U. S.). La Quinhua,

Macbride & Featherstone 2027. Near Huancayo, *Killip & Smith 23355*. Río Blanco, *Killip & Smith 21708*.

I have seen a photograph of type material of *Alternanthera lupulina* HBK., as represented in the Berlin herbarium; it is an altogether different plant from this one, and agrees perfectly with Kunth's original description. There may have been a mixture in the Humboldt and Bonpland material distributed as *Alternanthera lupulina*, although Moquin apparently had not seen an authentic specimen, and must have identified the name from description.

As type of *Alternanthera Macbridei* may be designated *Macbride & Featherstone 967*, as represented on sheet No. 517,495 of the herbarium of Field Museum. The species is an exceptionally well-marked one, easy of recognition by the red-blotched leaves subtending the cluster of sessile terminal heads.

***Alternanthera piurensis*, sp. nov.**—Ut videtur herba subscandens ramosa, ramis gracilibus fusco-ferrugineis glabris vel novellis sparse breviter patenti-pilosis, internodiis valde elongatis; folia breviter petiolata tenuia in sicco fusca, petiolo gracili 3–6 mm. longo; lamina ovata vel elliptico-ovata 1.5–4 cm. longa 1–2 cm. lata longe acuminata vel abrupte cuspidato-acuminata basi vulgo obtusa vel subrotundata et abrupte decurrens, utrinque sparse pilis longis albidis laxis patentibus pilosa, nervis obscuris; capitula in paniculas laxas foliatis disposita, stramineo-alba, globosa c. 1 cm. diam., axillaria et terminalia, lateralibus simplicibus vel triglomeratis, terminalibus vulgo triglomeratis, omnibus sessilibus vel breviter pedunculatis, pedunculis vix 5 mm. longis, glomerulis basi saepe foliaceo-bracteatis, bracteis plerumque capitulis brevioribus; bracteae et bracteolae late ovatae sepalis plus quam duplo breviores acutae vel acuminatae et breviter aristato-mucronatae, glabrae vel ad costam prominentem sparse pilosae; sepala lineari-oblonga c. 5 mm. longa glabra acuta vel breviter acuminata erecta fere enervia, costa obscura; staminodia linearia filamentis longiora apice lineari-lacinata, antheris linearibus 1.2 mm. longis.—Peru: Below Ayavaca, Dept. Piura, alt. 2,600 meters, May, 1912, A. Weberbauer 6358 (herb. Field Mus. No. 621,564, type; duplicate in U. S. Nat. Herb.).

Related to *A. paniculata* HBK., which differs in its usually densely pubescent leaves, somewhat smaller flowers, and long-pedunculate axillary flower heads which never are bracted at the base.

***Iresine Macbridei*, sp. nov.**—Suffrutex erectus vel subscandens, ramis stramineis vel brunnescentibus gracilibus obtuse angulatis laxe pilis longis albis tomentosis vel glabratissimis ad nodos dense villosis; folia breviter petiolata crassiuscula, petiolo crassiusculo 3–6 mm. longo villosa; lamina ovata vel ovato-oblonga 6–8 cm. longa 2.5–4 cm. lata longiuscule acuminata basi obtusa et saepe breviter decurrens, supra viridis, pilis longis laxissimis pilosa vel serius

glabrata et aspera, subtus paullo pallidior, ubique dense longissime pilis plus minusve patentibus laxis pilosa vel serius glabrata, costa pallida crassa elevata, nervis lateralibus utroque latere c. 8 prominentibus angulo acuto adscendentibus; flores dioeci, panicula terminali basi foliata ampla laxa multiflora c. 25 cm. longa et fere aequilata, ramis laxe tomentosis gracilibus patentibus vel adscendentibus; spiculae femineae albae vel stramineae obtusae globosae vel breviter oblongae 4 mm. diam. sessiles vel breviter pedunculatae; bractae ovato-rotundatae acutae sparse villosae, bracteolis duplo longioribus acutis; sepala floris feminei oblonga acuta scariosa 2 mm. longa basi pilis longis albis pilosa, pilis sepalis duplo vel triplo longioribus.—Peru: Huacapistana, Dept. Junín, open hillside, alt. 1,800–2,400 meters, June, 1929, *E. P. Killip & A. C. Smith 24207* (herb. Field Mus. No. 613,778, type); alt. 1,800 meters, sunny shrubby canyon side, September, 1923, *J. Francis Macbride 5823*.

So many untenable species have been described in the group of *Iresine Celosia* L. that it is scarcely commendable to add to the number another that may have no better claims to specific rank. The present plant differs from all specimens of that species in the pubescence of the leaves, consisting of very long and slender, soft, laxly spreading hairs. This is most marked in the type specimen. The second collection cited evidently represents the same species, but this is a rather weathered plant, in which most of the hairs have been abraded. A few characteristic long hairs still persist, however, along the costa.

NYCTAGINACEAE

***Pisonia aculeata* L.**—The following collection of this common plant is listed here because of the local name that accompanies it: Mexico: Fortín, Veracruz, February, 1883, *E. Kerber 274* (herb. Leningrad). Vernacular name, “xúchil.”

***Torrubia Snethlagei*, sp. nov.**—Frutex 4–5-metralis, ramulis crassiusculis subteretibus vel subangulatis, vetustioribus griseis vel brunnescentibus, novellis fuscis hinc inde ferrugineo-villosulis vel fere glabris, internodiis brevibus; folia opposita fere sessilia crasse coriacea et plus minusve carnosae, petiolo crasso vix 2 mm. longo; lamina rotundata usque ad ovalis vel rotundato-elliptica 2–4.5 cm. longa 1.5–3.5 cm. lata obtusa vel rotundata basi rotundata vel saepius breviter cordata, supra sublucida enervia glabra, subtus glabra, costa prominente, nervis lateralibus utroque latere c. 4 obscuris angulo latiusculo adscendentibus, nervulis obsoletis, margine plus minusve revoluti; inflorescentiae masculae paucae graciliter 2–3.5 cm. longe pedunculatae cymosae pauciflorae c. 1 cm. latae basi brevissime trichotomae, ramis brevissimis sparse ferrugineo-villosulis vel fere glabris, bracteis minutis ovatis obtusis persistentibus

vix 1 mm. longis, floribus sessilibus; perianthium obconicum 3 mm. longum extus obscure ferrugineo-puberulum vel glabratum ore c. 2 mm. latum obscure brevissime obtuso-lobulatum basi acutum brunnescenti-flavum; stamina c. 5 longe exserta, antheris didymis 0.5 mm. longis.—Brazil: Maranhão, São Luiz, Olho d'Água, strand, July 31, 1923, *H. Sneathlage* 152 (herb. Field Mus. No. 618,902, type; duplicate in herb. Berol.).

A plant of distinctive leaf form, remarkable in the genus for the thick and somewhat fleshy texture of the leaves.

Cyphomeris crassifolia Standl. Contr. U. S. Nat. Herb. 13: 428. 1911. *Senkenbergia crassifolia* Standl. Contr. U. S. Nat. Herb. 12: 373. 1909.

The species was described from Saltillo, Coahuila, Mexico, and has been reported also from the state of Nuevo León. The following specimen furnishes a new state record: Tamaulipas: Limestone ledges, La Tamaulipeca, July, 1930, *H. H. Bartlett* 10583.

Neea parviflora Poepp. & Endl. Nov. Gen. & Sp. 2: 46. 1838.

Heretofore this plant has been known only from Peru, being rather common in the Amazonian region of that country. It may be reported now for Colombia: Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug* 1955. Vernacular name, "yana muco." The leaves are chewed by the Indians, making their teeth black but preserving them. These Indians have very sound and strong teeth. *Yana* signifies black, *muco* chew (*Klug*).

Mirabilis ciliatifolia (Weatherby), comb. nov. *Allionia ciliata* Standl. Contr. U. S. Nat. Herb. 12: 345. 1909. *Oxybaphus ciliatifolius* Weatherby, Proc. Amer. Acad. 49: 492. 1913. *M. ciliata* Standl. Field Mus. Bot. 8: 306. 1931, non Meigen, 1893.

Miss Winifred E. Burrell of the Gray Herbarium has been so kind as to inform me that the name *Mirabilis ciliata* already had been published by Meigen in 1893, and therefore can not be used for the plant of the United States. Its publication had been overlooked when making recently the new and invalid combination, based upon *Allionia ciliata* Standl.

RANUNCULACEAE

Ranunculus Salasii, sp. nov.—Herba perennis, radicebus fasciculatis gracilibus sed plus minusve incrassatis elongatis; caules uniflori (?) c. 18 cm. longi suberecti striati praesertim supra pilis paucis gracilibus adscendentibus induti, prope medium folio solitario longipetiolato onusti et paullo infra apicem bracteas 2 foliaceas

oblongo-lineares 7–8 mm. longas gerentes; folia basilaria longissime petiolata membranacea, petiolo gracillimo 8.5 cm. longo sparsissime pilis longissimis mollibus piloso; lamina reniformi vel semiorotunda c. 13 mm. longa et 17 mm. lata apice late rotundata, basi profunde aperte cordata, grosse obtuse dentata, dentibus apice plus minusve incrassatis, supra glabra vel glabrata, subtus sparse pilis longissimis subadpressis pilosa, dentibus dense longiciliatis, lamina folii caulini simili basi truncata; sepala ovalia obtusa 5 mm. longa extus densiuscule adpresso-pilosa; petala tantum imperfecta visa lutea ut videtur ovalia conspicue venosa; cetera ignota.—Guatemala: Cumbres del Chol, Dept. Huehuetenango, alt. 3,100 meters, April, 1931, J. G. Salas 1410 (herb. Field Mus. No. 647,687, type).

The species is based upon a single small plant, whose flower is imperfect and immature. It is altogether unlike any of the few species of *Ranunculus* known from Central America, nor have I been able to find a very close relative among the Mexican species. It was included in a small but highly interesting collection of plants made on the high mountains of Guatemala by Señor Salas, who has obtained so many unusual plants previously in the mountain regions of Guatemala.

***Ranunculus testiculatus* Crantz.**—Utah: In dry soil near the mouth of Mill Creek Canyon, Salt Lake County, alt. 1,350 meters, May 8, 1932, A. O. Garrett 6100. Of this plant Professor Garrett states that he found "quite a colony" of it, growing near Salt Lake City. It is a native of southeastern Europe and of Siberia and other regions of western Asia. In general appearance it is altogether unlike the more familiar forms of the genus *Ranunculus*, and it and related species sometimes have been maintained as a separate genus, under the name *Ceratocephalus*, the present species being known to some authors as *Ceratocephalus orthoceras* DC. The plant is an interesting addition to the flora of Utah, and possibly to that of the United States.

Ranunculus testiculatus has been treated by some botanists as a variety of *R. falcatus* L., but recent authorities seem to regard the two as distinct species. Certainly they appear so to the casual observer.

ANONACEAE

***Rollinia mexicana*, sp. nov.**—Ramuli graciles subteretes dense pilis brevibus adscendentibus vel subpatentibus brunnescentibus mollibus pilosi; folia alterna magna crasse herbacea breviter petiolata, petiolo crassiusculo 8–11 mm. longo tereti dense breviter pilosulo; lamina oblonga vel anguste elliptico-oblonga 12.5–20 cm. longa 5–8.5 cm. lata abrupte brevi-acuminata, acumine attenuato obtuso, basi

late obtusa vel subrotundata, supra cinereo-viridis, praesertim ad venas pilosula vel glabrata, subtus vix pallidior, ubique dense velutino-pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 19 gracilibus prominentibus angulo lato adscendentibus subarcuatis nervulis prominulis laxe reticulatis; pedunculi infra-axillares et oppositifolii graciles recti c. 4.5 cm. longi dense breviter brunneo-pilosuli; sepala extus dense ferrugineo-tomentosa e basi latissime triangulari abrupte acuta c. 3 mm. longa et 5 mm. lata; petala late ovali-oblonga recte patentia densissime ferrugineo-tomentosa 1 cm. longa et 6 mm. lata apice late rotundata crassa.—Mexico: Tuspango, Valley of Córdoba, Veracruz, June, 1865–66, *Bourgeau* 2448 (herb. Leningrad, type). Zacuapam, Veracruz, along creek, June, 1931, *C. A. Purpus* 15399.

Probably this is the plant that has been reported from Mexico as the West Indian *Rollinia mucosa* (Jacq.) Baill. (see Contr. U. S. Nat. Herb. 23: 280), but in the classification of the genus proposed by Safford it is referable rather to the group (Journ. Wash. Acad. Sci. 6: 375. 1916) containing *R. deliciosa* Safford and *R. Jimenezii* Safford. *Rollinia mexicana* is represented by rather inadequate material, but it appears to be amply distinct from all the Central American species of the genus. It is noteworthy for the very dense and soft pubescence of the lower leaf surface.

HERNANDIACEAE

Hernandia guianensis Aubl.—When the text of the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 298) was prepared, only a single specimen of this species was available. Another one, likewise sterile, may now be placed on record: Colipa, Veracruz, July, 1841, *Karwinsky* (L.). Vernacular name, “palo de chicalpexte.”

ROSACEAE

Crataegus uniflora Muench.—This species, which happens to be one of the few members of the genus which can be recognized by those who have not devoted their lives to study of the trivial variations of the group, has not been recorded from Mexico, although it ranges from the southeastern United States into Texas. The specimens cited below, so far as the writer can determine, differ in no essential respect, if in any, from others collected in the southeastern United States. They illustrate a considerable extension of range for the species. Mexico: Near crest of the range above Mesa de Tierra, Sierra de San Carlos, Tamaulipas, July, 1930, *H. H. Bartlett* 10255, 10259.

Prunus Zinggii, sp. nov.—Arbor, ramis vetustioribus nigrescentibus vel fusco-ferrugineis, lenticellis paucis pallidis conspersis, novellis dense velutine ferrugineo-pilosulis, internodiis brevibus; folia alterna breviter petiolata firme membranacea mediocria, petiolo crassiusculo 5–10 mm. longo dense pilosulo; lamina oblonga 6–11 cm. longa 2.8–4.5 cm. lata acuta vel obtusa basi obtusa vel anguste rotundata integra vel subundulata, supra in sicco lucida griseo-viridis, venis subimpressis, subtus fere concolor molliter pilis pallide ferrugineis pilosa vel serius glabra, costa gracili elevata, nervis lateralibus utroque latere c. 7; racemi solitarii ad nodos defoliatos annotinos inserti sessiles sublaxi multiflori 3–5 cm. longi, rhachi crassiuscula angulata sparse pilosa, bracteis linearibus brunnescentibus pedicellis brevioribus, pedicellis pilosis 2–3 mm. longis crassiusculis; hypanthium late semiglobosum pilis longiusculis pilosum 3 mm. latum, dentibus calycinis oblongo-triangularibus vel deltoideis obtusis erectis viridibus; petala alba late rotundata brevissime unguiculata 1.5–2 mm. longa glabra; stamina vix exserta.—Mexico: Mountains of southern Chihuahua, winter of 1930–31, *Robert M. Zingg A34* (herb. Field Mus. No. 641,574, type).

Vernacular name, “huaparín.” The leaf blades apparently bear two small glands on the lower surface near the base and close to the costa. The leaves probably are persistent. *Prunus Zinggii* apparently is related to *P. erythroxylon* Koehne, of Colima and Michoacán, but the latter has glabrous leaves.

CONNARACEAE

Connarus Klugii, sp. nov.—Frutex 1.5–2 m. altus, ramulis crassis teretibus lenticellis numerosis parvis elevatis conspersis; folia magna longe petiolata, rhachi elongata subtereti glabra, petiolo basi valde incrassato; foliola 7–11 subopposita magna crasse 4–6 mm. longe petiolulata oblonga vel ovato-oblonga 15–26 cm. longa 5–7.5 cm. lata subabrupte cuspidato-acuminata, acumine angusto sensim attenuato supra lineari obtuso, basi rotundata vel cuneato-obtusa plus minusve obliqua, glabra, supra sublucida costa nervisque subimpressis venulis vix prominulis, subtus fere concoloria costa venisque valde elevatis, venulis paucis elevatis laxe reticulatis; paniculae ut videtur laterales fastigiatæ, ramis simplicibus c. 3 cm. longis subsessilibus dense pilis brevibus ferrugineis ramosis tomentosis dense multifloris, pedicellis crassis 1–1.5 mm. longis, bracteis minutis; calyx extus dense stellato-tomentulosus ferrugineus, lobis late ovatis vel ovalibus apice rotundatis; petala ovalia vel late ovata sepalis fere duplo longiora recurva punctata; stamina petalis subaequilonga.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 meters, in forest, May–June, 1930, *G. Klug 1494* (herb. Field Mus. No. 627,497, type); also *Klug 500*, from the same locality.

The plant has more numerous leaflets than any species of the genus known from the Amazonian region. In addition, it is

noteworthy for the exceptionally large leaflets with very long, narrow tips.

Rourea rhynchosoides, sp. nov.—Frutex scandens, ramulis crassis striatis dense pilis brevibus patentibus brunneis pilosulis; folia mediocria longipetiolata; foliola 3 crasse 3–5 mm. longe petiolulata late ovalia, ovali-rotundata vel obovato-rotundata 8–12 cm. longa 6–8.5 cm. lata, terminale paullo majus latiusque, apice subrotundata vel breviter acutata, basi late rotundata vel subemarginata, coriacea, supra in sicco cinereo-viridia fere glabra tantum ad nervos breviter pilosa, nervis venulisque non elevatis, subtus dense pilis brevibus patentibus gracillimis velutino-pilosa, costa nervisque valde elevatis, venulis quoque elevatis et arcte eleganter reticulatis; inflorescentia paniculata pedunculata 12–17 cm. longa laxa ramosa, ramis dense fulvo-tomentosis, ramis ultimis elongatis remote multifloris, pedicellis crassis vix 1 mm. longis, bracteis minutis; calyx vix 2 mm. longus dense fulvo-tomentosus, lobis brevibus triangulari-ovatis obtusis erectis; petala lutescentia glabra sepalis duplo longiora suborbicularia punctata; stamina petalis breviora.—Peru: Mishu-yacu, near Iquitos, Dept. Loreto, alt. 100 meters, in forest, October–November, 1929, *G. Klug* 578 (herb. Field Mus. No. 613, 395, type).

Among the species of the upper Amazon Valley, this is well marked by the thick, broad leaflets, with elevated and strongly reticulate venation, densely velvety-pilose on the lower surface.

LEGUMINOSAE

Mimosa Wootonii Standl. Contr. U. S. Nat. Herb. 23: 364. 1922.

The species has been known heretofore only from the type specimen, collected at Hacienda Buena Vista, Tamaulipas, Mexico. Another collection from the same state is at hand: Tamaulipas: Cerro Tres Vetas, near San José, Sierra de San Carlos, 810 meters, July, 1930, *H. H. Bartlett* 10385; a scrambling vine with white flowers.

Acacia Deamii (Britt. & Rose), comb. nov. *Senegalia Deamii* Britt. & Rose, N. Amer. Fl. 23: 117. 1928.

Acacia Fisheri (Britt. & Rose), comb. nov. *Acaciella Fisheri* Britt. & Rose, N. Amer. Fl. 23: 99. 1928.

Acacia Ortegae (Britt. & Rose), comb. nov. *Senegalia Ortegae* Britt. & Rose, N. Amer. Fl. 23: 119. 1928.

Acacia peninsularis (Britt. & Rose), comb. nov. *Senegalia peninsularis* Britt. & Rose, N. Amer. Fl. 23: 116. 1928.

Acacia guadalajarana, nom. nov. *Acaciella prostrata* Britt. & Rose, N. Amer. Fl. 23: 102. 1928, non *Acacia prostrata* Lodd. 1818.

Acacia Rosei Standl. Contr. U. S. Nat. Herb. 20: 187. 1919.

A synonym of this species is *Acacia mazatlana* Jones, Contr. West. Bot. 15: 141. 1929.

Calliandra acapulcensis (Britt. & Rose), comb. nov. *Anneslia acapulcensis* Britt. & Rose, N. Amer. Fl. 23: 72. 1928.

Calliandra compacta (Britt. & Rose), comb. nov. *Anneslia compacta* Britt. & Rose, N. Amer. Fl. 23: 62. 1928.

Calliandra Michelii (Britt. & Rose), comb. nov. *Anneslia Michelii* Britt. & Rose, N. Amer. Fl. 23: 61. 1928.

Desmanthus Arsenei (Britt. & Rose), comb. nov. *Acuan Arsenei* Britt. & Rose, N. Amer. Fl. 23: 134. 1928.

Desmanthus latus (Britt. & Rose), comb. nov. *Acuan latum* Britt. & Rose, N. Amer. Fl. 23: 132. 1928.

Desmanthus Painterii (Britt. & Rose), comb. nov. *Acuan Painterii* Britt. & Rose, N. Amer. Fl. 23: 134. 1928.

Schrankia Berlandieri (Britton), comb. nov. *Leptoglottis Berlandieri* Britton, N. Amer. Fl. 23: 144. 1928.

Schrankia mimosoides (Small), comb. nov. *Leptoglottis mimosoides* Small ex Britt. & Rose, N. Amer. Fl. 23: 139. 1928.

Schrankia potosina (Britt. & Rose), comb. nov. *Leptoglottis potosina* Britt. & Rose, N. Amer. Fl. 23: 143. 1928.

Caesalpinia tampicoana (Britt. & Rose), comb. nov. *Poincianella tampicoana* Britt. & Rose, N. Amer. Fl. 23: 330. 1930.

Caesalpinia Standleyi (Britt. & Rose), comb. nov. *Poincianella Standleyi* Britt. & Rose, N. Amer. Fl. 23: 330. 1930.

Bauhinia oaxacana (Britt. & Rose), comb. nov. *Casparea oaxacana* Britt. & Rose, N. Amer. Fl. 23: 212. 1930.

Cassia Rosei, nom. nov. *Grimaldia confusa* Britt. & Rose, N. Amer. Fl. 23: 300. 1930, non *Cassia confusa* Phil. 1893.

Cassia Greenei, nom. nov. *Chamaecrista puberula* Greene, Pittonia 5: 134. 1903, non *Cassia puberula* HBK. 1823.

Cassia unijuga Rose, Contr. U. S. Nat. Herb. 5: 195. 1899.

Mexico: Sierra near Cerritos, San Luis Potosí, May, 1932, *H. W. von Rozyński* 364. The species has been known previously only from Puebla, the type having been collected at Tehuacán. It is one of the best marked of the Mexican members of the genus.

Cynometra retusa Britt. & Rose, Trop. Woods 7: 5. 1926.

The type was collected near the Atlantic coast of Guatemala, and the tree grows rather abundantly along the Honduran coast.

It has been collected recently in British Honduras. The exact locality at which the specimens were obtained is not indicated, but they were forwarded from that colony by the Conservator of Forests, and were received at Field Museum through Professor Samuel J. Record. The pods, which have not been described, are asymmetri- cally broadly elliptic, 2 cm. long and 1.5 cm. wide, somewhat com- pressed, abruptly contracted at the base and apiculate at the apex, dark brownish, and much roughened.

Hoffmanseggia pueblana (Britton), comb. nov. *Larrea pue- blana* Britton, N. Amer. Fl. 23: 313. 1930.

Canavalia altipendula (Piper), comb. nov. *Wenderothia alti- pendula* Piper, Contr. U. S. Nat. Herb. 20: 581. 1923.

Canavalia villosa Benth. var. **glabra** (Mart. & Gal.), comb. nov. *Wenderothia glabra* Mart. & Gal. Bull. Acad. Brux. 10, pt. 2: 191. 1843.

In the typical form of the species the leaflets are densely grayish- tomentulose beneath. Forms with nearly glabrous or sparsely strigose leaflets appear at first glance so unlike the normal form that one would believe they must represent a distinct species. Since, however, they appear to differ only in the amount of pubes- cence, Piper (Contr. U. S. Nat. Herb. 20: 584. 1925) probably was correct in taking them to be only variants of *Canavalia villosa*. The glabrate form may well be distinguished as a variety, as above.

Wenderothia glabra was described as having white flowers. Specimens obtained recently by H. H. Bartlett (Nos. 11093, 10924) in the Sierra de San Carlos, Tamaulipas, Mexico, are described as having either wholly purple or purple and white corollas.

Desmodium Langlasseanum (Schindl.), comb. nov. *Mei- bomia Langlasseana* Schindl. Repert. Sp. Nov. 20: 147. 1924.

Desmodium parvum (Schindl.), comb. nov. *Meibomia parva* Schindl. Repert. Sp. Nov. 20: 153. 1924.

Desmodium prodigum (Schindl.), comb. nov. *Meibomia pro- dige* Schindl. Repert. Sp. Nov. 20: 148. 1924.

Desmodium Schusteri (Schindl.), comb. nov. *Meibomia Schusteri* Schindl. Repert. Sp. Nov. 20: 146. 1924.

Desmodium Sumichrastii (Schindl.), comb. nov. *Meibomia Sumichrastii* Schindl. Repert. Sp. Nov. 20: 138. 1924.

Desmodium transversum (Rob. & Greenm.), comb. nov. *D. spirale* var. *transversum* Rob. & Greenm. Proc. Amer. Acad. 29: 384. 1894. *Meibomia transversa* Schindl. Repert. Sp. Nov. 20: 154. 1924.

Desmodium Maxonii (Standl.), comb. nov. *Meibomia Maxonii* Standl. Contr. U. S. Nat. Herb. 18: 108. 1916.

Desmodium occidentale (Morton), comb. nov. *Meibomia occidentalis* Morton, Bull. Torrey Club 57: 181. 1930.

Desmodium metallicum (Rose & Standl.), comb. nov. *Meibomia metallica* Rose & Standl. Contr. U. S. Nat. Herb. 16: 214. 1913.

Eriosema grandiflorum (Schlecht. & Cham.) Seem.—A new synonym of this species is *Cracca collina* Jones, Contr. West. Bot. 15: 137. 1929.

Psoralea brachypus (Rydb.), comb. nov. *Pedimelum brachypus* Rydb. N. Amer. Fl. 24: 24. 1919.

Psoralea trinervata (Rydb.), comb. nov. *Pedimelum trinervatum* Rydb. N. Amer. Fl. 24: 23. 1919.

Tephrosia Conzattii (Rydb.), comb. nov. *Cracca Conzattii* Rydb. N. Amer. Fl. 24: 162. 1923.

Tephrosia lanata Mart. & Gal.—*Cracca lupinoides* Jones (Contr. West. Bot. 15: 137. 1929) is based upon material which is a mixture of the typical form of this species and its variety *velutina* (Rydb.) Macbride.

Tephrosia latidens (Small), comb. nov. *Cracca latidens* Small, Fl. Southeast. U. S. 609, 1331. 1903.

Tephrosia Roseana (Rydb.), comb. nov. *Cracca Roseana* Rydb. N. Amer. Fl. 24: 164. 1923.

Zornia Harmsiana, nom. nov. *Zornia gracilis* Harms, Bot. Jahrb. 42: 212. 1908, non DC. 1825.

ZYGOPHYLLACEAE

Kallstroemia boliviana, sp. nov.—Herba procumbens vel prostrata ut videtur perennis, caulibus elongatis hirsutis et dense incurvo-puberulis; foliola trijuga oblonga vel ovalia valde obliqua 6–18 mm. longa apice rotundata, obtusa vel subacuta utrinque dense adpresso-pilosa, petiolo foliolis brevior; pedicelli foliis breviores hirsuti usque ad 1.5 cm. longi; sepala c. 8 mm. longa anguste lanceolato-oblonga breviter acuminata sparse hispidohirsuta et adpresso-pilosa persistentia; petala 12–18 mm. longa; fructus dense cinereo-strigosus 8–10 mm. longus, columna e basi lata conica sensim attenuata strigillosa.—Bolivia: Cerro San Pedro, Cochabamba, alt. 2,600 meters, December 26, 1928, *J. Steinbach* 8784 (herb. Field Mus. No. 637,209, type). Bolivian Plateau, *Bang* 927. Cotaña am Illimani, Dept. La Paz, 2,400 meters, *Buchtien* 671. Without locality, *Mandon*.

This plant is perhaps confined to Bolivia; it is not matched among the rather numerous Peruvian specimens at hand. It is most closely related to *K. caribaea* Rydb., which ranges from the Antilles southward at least to Peru, and may be only a form or variety of *K. maxima* (L.) Torr. & Gray, but it differs strikingly in the size of its flowers from both those species, in which the petals are only half as long.

Porlieria Steinbachii, sp. nov.—Ramuli rigidi ochracei, novelli praesertim ad nodos villosotomentosi glabrescentes; folia parva subsessilia, foliolis c. 15-jugis linearibus 4–8 mm. longis obtusis sessilibus supra glabratis sublucidis subtus sparse subsericeis vel glabratis; flores solitarii 1 mm. longe pedicellati, sepalis 2.5 mm. longis oblongis vel ovalibus obtusissimis nitido-strigosis; petala sepalis paullo longiora glabra; ovarium obtuse trilobum glabrum stylo brevi columnari terminatum.—Bolivia: Trockene Bergreite, Mairana, Dept. Santa Cruz, alt. 1,400 meters, October 16, 1928, *José Steinbach 8281* (herb. Field Mus. No. 637,072, type).

All the other South American species of the genus have much less numerous leaflets. This is probably the same as *Mandon 861* from Bolivia, mentioned by Rusby (Mem. Torrey Club 6: 15. 1896) under his description of *Porlieria arida*.

RUTACEAE

Zanthoxylum Clava-Herculis L. var. **fruticosum** (Gray) Wats. Bibl. Ind. 1: 156. 1878.

Although ranging widely in the southern United States, from Florida to Texas, neither *Zanthoxylum Clava-Herculis* nor its variety has been reported from Mexico. The following collection, although sterile, seems clearly to be referable to the variety cited:

Mexico: Cerro Carrizo, vicinity of San José, Sierra de San Carlos, Tamaulipas, 1,410 meters, July, 1930, *H. H. Bartlett 10511*.

MALPIGHIACEAE

Aspicarpa hyssopifolia Gray, Bost. Journ. Nat. Hist. 6: 167. 1850.

No Mexican specimens of the species were available when the *Trees and Shrubs of Mexico* was written, but it was listed in that work (Contr. U. S. Nat. Herb. 23: 575. 1923) in the belief that it must occur in northeastern Mexico. A Mexican collection of *Aspicarpa hyssopifolia* may now be placed on record: Cerro de la Tamaulipeca, vicinity of San Miguel, Sierra de San Carlos, 600 meters, July, 1930, *H. H. Bartlett 10614*.

BUXACEAE

Buxus Konzattii, sp. nov.—Glabra, ramulis crassis stramineo-olivaceis petiolis decurrentibus plus minusve angulatis, internodiis foliis brevioribus; folia mediocria petiolata lucida in sicco fusco-olivacea subcoriacea, petiolo angustissime marginato 7–10 mm. longo; lamina lanceolato-oblonga 4–7 cm. longa 2–3 cm. lata acuta vel acuminata, acumine ipsosaespinoso-producto, basi obtusa abrupte contracta et decurrens, venis supra obsoletis, costa subtus elevata gracili, penninervia, nervis tenerrimis prominulis, venulis obscuris, margine anguste revoluta; racemi parvi densi capituliformes subsessiles vel usque ad 5 mm. longe pedunculati, floribus pedicellis crassis usque ad 2 mm. longis stipatis vel interdum sessilibus, flore femineo unico, bracteis sepalis conformibus; sepala 3–3.5 mm. longa, floris feminei rotundato-ovata et abrupte acuminata ciliata, floris masculi angustiora; capsula immatura late ovoidea 8 mm. longa sessilis, stylis latis obtusis 1.5 mm. longis recurvis.—Mexico: Chapulapa-Chiquihuitlán, Distrito Cuicatlán, Oaxaca, August 18, 1909, *C. Konzattii* 2508 (herb. Field Mus. No. 285,547, type).

Several specimens of this plant have come to the writer's attention at one time or another, but its systematic position was not recognized until recently, although it is sufficiently like other members of the genus, which, it must be stated, is not amply represented in continental North America. *Buxus Konzattii* is altogether unlike any of the three species already described from Mexico, but it is very closely related to *B. columnaris* Muell. Arg. of Martinique. The latter differs in its obtuse sepals and its 3-nerved leaves.

ANACARDIACEAE

Rhus Galeottii, sp. nov.—Ramuli gracillimi subteretes olivacei vel ochracei, vetustioribus lenticellis parvis elevatis conspersis, novellis dense pilosulis; folia alterna mediocria 3–5-foliolata, petiolo gracillimo 2–3.5 cm. longo tereti, rhachi in foliis 5-foliolatis 2–2.5 cm. longa nuda dense hirtella; foliola lateralia sessilia ovalia vel oblongo-elliptica vel interdum ovali-obovata 2–3.5 cm. longa 1.3–2.2 cm. lata integra vel inconspicue sinuato-crenulata apice late rotundata vel subemarginata basi rotundata vel interdum breviter oblique cuneato-angustata, foliolo terminali majore oblongo-ovalia vel ovali-obovata 4–7.5 cm. longo 2–4 cm. lato interdum prope apicem breviter trilobato prope basin abrupte vel sensim contracto et in petiolulum marginatum usque ad 7 mm. longum decurrente, foliolis omnibus membranaceis utrinque dense patenti-pilosis, venis gracillimis prominulis, subtus vix pallidioribus; inflorescentia terminalis foliis bene brevior 2.5–5 cm. longa simpliciter paniculato-ramosa vel subsimplex laxa pauci- vel multiflora, ramis gracillimis hirtellis, bracteis persistentibus ovatis extus hirtellis vix 1 mm. longis, floribus sessilibus; sepala rotundato-ovata apice rotundata

viridia subscariosa ciliolata et interdum extus sparse minute pilosula; petala imbricata c. 1.5 mm. longa late obovata apice rotundata glabra.—Mexico: Talea, September, 1844, *H. Galeotti 7247F* (herb. Leningrad, type).

The plant seems to be a relative of *Rhus terebinthifolia*, *R. jalis-cana*, and *R. Barclayi*, all of which are Mexican species. They differ in having more numerous acute or acuminate leaflets, commonly of decidedly thicker texture, and much larger and denser panicles.

Rhus chondroloma, sp. nov.—Ramuli ferruginei subteretes minute cinereo-puberuli; folia alterna 3–5-foliolata, petiolo crassiusculo subtereti exalato 1.5–2.5 cm. longo minute puberulo vel glabrato, rhachi in foliis 5-foliolatis 1.5–2.5 cm. longa anguste alata, ala anguste revoluta; foliola lateralia sessilia vel brevissime petiolulata oblonga usque ad late elliptica vel late elliptico-obovata 2.5–4 cm. longa apice late rotundata vel obtusissima basi rotundata vel oblique obtusa, folioli terminali majore late rotundato-obovato vel late elliptico 2.5–4 cm. longo 2–3 cm. lato apice late rotundato vel truncato et saepe obscure apiculato, basin versus saepissime cuneatim angustato et in petiolulum marginatum 8–13 mm. longum abrupte contracto, foliolis omnibus crasse coriaceis lucidis supra fusco-viridibus, venis pallidis prominulis conspicuis, subtus pallidis glabris vel minutissime obscure puberulis, margine pallido incrassato; inflorescentia terminalis paniculata breviter pedunculata foliis vix aequilonga 2–4 cm. longa dense multiflora, ramis dense minute puberulis crassis, floribus sessilibus, bracteis imbricatis late triangulari-ovatis c. 2 mm. longis acutiusculis extus dense puberulis; sepala rotundato-ovata apice rotundata vel obtusissima crasse scariosa glabra; petala late obovata imbricata apice rotundata glabra 3 mm. longa.—Mexico: Tehuacán, Puebla, June, 1905, *C. A. Purpus 1290* (herb. Field Mus. No. 192,858, type).

The closest relative of this plant is *Rhus virens* Lindheimer, which occurs in northeastern Mexico and the adjacent United States. It differs from *Rhus chondroloma* in having 5 or 7 leaflets, which are decidedly different in form.

***Rhus radicans* L.**—The following specimen of the plant is accompanied by a local name which seems not to have been associated previously with the species: Mexico: Fortín, Veracruz, March, 1883, *E. Kerber 397* (herb. Leningrad). Vernacular name, "aquixtle."

***Rhus lanceolata* (Gray) Britton** in Britt. & Shafer, *N. Amer. Trees* 606. 1908. *R. copallina* var. *lanceolata* Gray, *Bost. Journ. Nat. Hist.* 6: 158. 1850.

This shrub, whether it be a distinct species or only a variety of the eastern *Rhus copallina*, has not been known to occur in Mexico. The following collection has been obtained there recently:

Tamaulipas: Near crest of Sierra de San Carlos, above Mesa de Tierra, July, 1930, *H. H. Bartlett 10269*.

CELASTRACEAE

Zinowiewia integerrima Turcz.—In the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 678) a single local name for the tree was listed. Another may now be reported: Mexico: Fortín, Veracruz, March, 1883, *E. Kerber 360* (herb. Leningrad). Vernacular name, “naranjillo.”

Schaefferia frutescens Jacq. Enum. Pl. Carib. 33. 1760.

In the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 682. 1923) it was stated that this shrub or tree was reported to occur in Veracruz, but no specimens had been seen by the writer. There may be reported now from Tamaulipas a collection that seems to be referable to the species. Although its leaves are slightly different from those of West Indian plants, the differences do not appear sufficient to warrant nomenclatorial recognition for the Mexican form.

Mexico: Vicinity of Marmolejo, Sierra de San Carlos, Tamaulipas, 660 meters, August, 1930, *H. H. Bartlett 10757*; a shrub 3.5 meters high; ripe fruits red.

STAPHYLEACEAE

Turpinia insignis (HBK.) Tulasne.—One collection examined recently is worthy of special mention: Mexico: Colipa, Veracruz, July, 1841, *Karwinsky 78* (herb. Leningrad). Vernacular name, “capulín cimarrón.”

SAPINDACEAE

Talisia peruviana, sp. nov.—Frutex vel arbuscula 2.5–6 m. alta, ramulis gracilibus subteretibus, novellis minute strigillosis; folia alterna pinnata 3-foliolata graciliter petiolata, rhachi brevitereti, foliolis breviter petiolulatis, petiolulo crassiusculo usque ad 5 mm. longo saepe subnullo, lateralibus alternis; foliola membranacea oblongo-elliptica, lanceolato-oblonga vel obovata 5.5–18 cm. longa 2–8 cm. lata subabrupte attenuato-acuminata vel saepe longe cuspidato-acuminata, basi acuta vel cuneata, glabra, minute dense pellucido-punctata; inflorescentia racemiformis foliis duplo brevior pauciflora, pedicellis crassiusculis 2–3 mm. longis dense ochraceo-strigillosis, sub fructum paullo elongatis, bracteis minutis; sepala 1.5 mm. longa ovali-oblonga obtusa extus sericea; petala cuneato-obovata 2 mm. longa; discus crassus glaber; ovarium 2-loculare dense strigillosum, stylo ad basin bifido, ramis brevibus crassis; fructus late ovalis 2 cm. longus luteus oliviformis basi et apice rotundatus vel

apice plus minusve angustatus et obtusus minute tuberculatus puberulus vel glabratus, 2-locularis, seminibus magnis in loculis solitariis.—Peru: Cumbasa, Tarapoto, Dept. San Martín, in forest, December 7, 1929, *Llewelyn Williams* 5745 (herb. Field Mus. No. 626,414, type). Tarapoto, *Williams* 6652, 6578. Río Mayo, Tarapoto, *Williams* 6208. Puerto Arturo, Dept. Loreto, *Williams* 5218, 5118, 5303; *Killip & Smith* 27915, 27874. Yurimaguas, Loreto, *Killip & Smith* 27645, 27673, 27636. Balsapuerto, Loreto, *Killip & Smith* 28549, 28481, 28484, 28627. Santa Rosa, Loreto, *Killip & Smith* 28857.

The generic position of this tree is decidedly uncertain, chiefly because no perfect flowers are available for study. With little doubt, it is closely related to *Talisia japurensis* (C. DC.) Radlk., originally published by Casimir DeCandolle as a species of *Guarea*, and placed by Radlkofer in the genus *Talisia*, although of doubtful position there, since the flowers are unknown. From the present plant *T. japurensis* differs in having 4–6 leaflets, the lateral ones on slender elongate petiolules. The ovary and fruit of *T. peruviana* are clearly 2-celled, and it seems probable that the same may be true of *T. japurensis*. The genus *Talisia* is described as having a 3-celled ovary, but one or more of the cells sometimes fail to develop in the fruit.

RHAMNACEAE

Gouania polygama (Jacq.) Urban.—In the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 712) no vernacular name was reported from Mexico for this species. It is, therefore, worth while to cite the following collection, which, although without fruit, apparently is referable here: Mexico: La Luz, near Córdoba, Veracruz, October, 1882, *E. Kerber* 73 (herb. Leningrad). Vernacular name, “misa mayor.”

TILIACEAE

Heliocarpus americanus L.—The following collection of this common species deserves citation because it is accompanied by a vernacular name which, apparently, has not been recorded: Mexico: Fortín, Veracruz, February, 1883, *E. Kerber* 276 (herb. Leningrad). Vernacular name, “huanate.” The name is similar to the more common *jonote*, and probably is a variant of it.

Corchorus aestuans L. Syst. Nat. ed. 10. 1079. 1759.

The occurrence of this species in Mexico has not been indicated by any material observed by the writer during recent years, although the plant is widely distributed in the West Indies and South

America. The following collection is in the herbarium of Field Museum: Manzanillo, Colima, October 20, 1910, *C. R. Orcutt 4488*.

Triumfetta brachistacantha, sp. nov.—Frutex, ramis gracilibus teretibus ferrugineis glabratiss, novellis minute stellato-puberulis; stipulae anguste lineares 1–2 mm. longae; folia parva graciliter petiolata membranacea, petiolo ad 6 mm. longo stellato-pilosulo; lamina oblongo-ovata vel lanceolato-ovata 1.5–2 cm. longa 8–10 mm. lata acuta vel acuminata basi lata breviter anguste cordata grosse inaequaliter crenata vel subserrata supra sparse minute stellato-pubescent, subtus densius stellato-hispidula, basi 5-nervia; flores subcymosi vel umbellati subracemose dispositi vel anguste paniculati, paniculis laxis multifloris, pedicellis crassiusculis usque ad 3 mm. longis stellato-puberulis; sepala linearia 5 mm. longa breviter appendiculata extus sparsiuscule minute stellato-puberula; petala spathulato-linearia sepalis subaequalia glabrata; stamina numerosa, filamentis gracillimis elongatis glabris; capsula sessilis globosa 4 mm. diam. fere omnino glabra dense echinata, echinis validis basi dilatatis vix 1 mm. longis apice breviter uncinatis glabris vel sparsissime puberulis.—Mexico: Chivela, Oaxaca, December, 1925, *G. Bossé 8019* (Herb. Field Mus. No. 641,470, type).

Among Mexican species of *Triumfetta* the present plant is easily distinct by its small fruits with remarkably short spines.

Triumfetta leiocarpa, sp. nov.—Frutex, ramulis gracilibus brunnescentibus glabratiss lenticellis paucis parvis conspersis; folia alterna magna membranacea longe graciliter petiolata, petiolo 6–9 cm. longo pilis paucis minutis stellatis praesertim apicem versus consperso; lamina ovato-rotundata c. 13 cm. longa et aequilata abrupte longiacuminata acumine angusto serrato, basi subtruncata, argute serrata vel crenato-serrata, supra viridis sparse hispidohirsuta et pilis paucis minutis stellatis induta, subtus sparse stellato-hispidula, basi 9-nervia; flores in paniculas c. 10 cm. longas laxas dispositi, ramis gracilibus sparsiuscule minute stellato-puberulis; capsula subsessilis omnino glabra globosa dense echinata 4–5 mm. diam., echinis rigidis gracilibus 3–3.5 mm. longis apice breviter uncinatis.—Mexico: Coahuayana, Colima, November, 1906, *G. M. Emrick 130* (herb. Field Mus. No. 200,470, type).

Vernacular name, “chayotillo negro.” The available material of the plant is too scant to be satisfactory for study, but it is sufficient to show that it represents a species distinct from any of those listed for Mexico. Its chief distinctive character is the complete absence of pubescence on the fruit.

Triumfetta Purpusii, sp. nov.—Frutex, ramis gracilibus teretibus cinnamomeis vel brunnescentibus dense stellato-tomentosis; stipulae deciduae filiformes ad 7 mm. longae; folia parvula longe graciliter petiolata vel superiora brevipetiolata membranacea, petiolo usque ad 3.5 cm. longo dense stellato-tomentoso; lamina

ovata vel ovato-oblonga 4–7 cm. longa 2–4 cm. lata longe anguste acuminata, basi rotundata et anguste breviter (ad 5 mm.) cordata, inaequaliter serrata, 7-nervia, supra dense pilis laxis albidis stellato-pilosa, subtus incana pilis mollibus densissime stellato-tomentosa; flores plerumque in axillis superioribus aggregati vel in paniculas parvas densas dispositi breviter pedicellati; sepala dense pilis longis pallidis mollibus stellato-pilosa, linearia 6–7 mm. longa apice longissime appendiculata, appendicibus filiformibus 7–8 mm. longis; petala lineari-ligulata sepalis subaequalia; stamina numerosa, filamentis gracillimis glabris; capsula dense pilis longiusculis patentibus albidis pilosa globosa 4 mm. diam., echinis subpaucis rigidis crassiusculis dense pilosis armata.—Mexico: Matazea, Veracruz, March, 1923, C. A. Purpus 9009 (herb. Field Mus. No. 553,014, type). Remudadero, Veracruz, rocky forest, November, 1926, Purpus 11099.

The relationship of the plant is with *Triumfetta falcifera* Rose, described from Acapulco, which differs in fruit characters. *T. Purpusii* is remarkable for extreme elongation of the sepal appendages.

MALVACEAE

Kosteletzkyia hibiscifolia, sp. nov.—Herba elata, ramis validis teretibus densiuscule pilis plerumque solitariis rigidis hispidis et lineis 2 pilulorum stellatorum parvorum onustis; folia magna membranacea longipetiolata, petiolo 4–6 cm. longo hispido; lamina profunde 5-lobata, late aperte basi cordata, supra pilis plerisque simplicibus dense hispida, subtus pilis plerisque stellatis hispidohirsuta, 7-nervia, lobis anguste oblongo-triangularibus longiacuminatis serrato-dentatis; flores paniculas magnas laxas multifloras efformantes, plus minusve racemose dispositi, breviter graciliter pedicellati, pedicellis ut rami paniculae hispidis et plus minusve stellato-puberulis; bracteolae 8–10 lineari-filiformes 5–7 mm. longae hispido-ciliatae; calyx 1 cm. longus profunde 5-lobatus extus dense minute stellato-tomentulosa, lobis oblongo-lanceolatis acuminatis versus apicem hispido-ciliatis, interdum versus basin pilis paucis stellatis majoribus onustis; petala ante anthesin 1.5 cm. longa extus stellato-hispidula et sparse hispida; cetera ignota.—Mexico: Ixtagua, San Ignacio, Sinaloa, alt. 650 meters, J. G. Ortega 485 (herb. Field Mus. No. 598,141, type).

This may be merely a form of *K. paniculata* Benth., but in that species the harsh pubescence is much less developed, and consists chiefly of stellate rather than simple hairs. In that, moreover, the bractlets are poorly developed, only 3–4 mm. long, and merely stellate-puberulent rather than hispid-ciliate with long stiff hairs.

FLACOURTIACEAE

Abatia mexicana Standl. Field Mus. Bot. 8: 318. 1931.

The type was collected at Mirador, Veracruz, Liebmann 15030. In a sending of Mexican plants received recently from Copenhagen

there is a second sheet of the species, *Liebmann 618*, labeled as collected at Tehuacán, Puebla, in December, 1841. I feel somewhat skeptical regarding the accuracy of the label of this second collection. It does not seem probable that a species of *Abatia* would be found in a region so arid as that about Tehuacán.

THYMELEACEAE

Schoenobiblus peruvianus, sp. nov.—Frutex, ramis vetustioribus ferrugineis glabratiss, novellis hirsutis vel interdum fere glabris; folia magna brevissime petiolata membranacea, petiolo crasso usque ad 1 cm. longo; lamina oblanceolato-oblonga vel anguste oblanceolata 16–30 cm. longa 5–12 cm. lata abrupte longiacuminata, acumine angusto attenuato, basin versus longe sensim attenuata et interdum fere ad basin petioli decurrens, supra glabra, venulis prominulis, subtus fere concolor, interdum dense pilis pallidis rigidis hirsuta, pilis persistentibus vel cito deciduis; inflorescentia multiflora paniculiformis vel umbelliformis longipedunculata usque ad 12 cm. longa, ramis crassis adpresso-pilosis vel subhirsutis, floribus subumbellatis, pedicellis crassiusculis adpresso-pilosis usque ad 1 cm. longis; sepala paulo inaequalia anguste oblonga obtusa 5–7 mm. longa dorso unicastata; stamina sepalis duplo brevioribus; fructus suboblique ovoideus glaber 15–18 mm. longus obtusus apiculatus.—Peru: Timbuchi, Alto Río Nanay, Dept. Loreto, July 1, 1929, *Llewelyn Williams 1162*. Paraíso, Alto Itaya, *Williams 3354*. Pebas, in forest, *Williams 1707, 1878, 1595*.

“Barbasco-caspi.” Of this small genus three species have been described previously, one from the Rio Japurá, Brazil, one from Trinidad, and another from Colombia. The Peruvian plant probably is most closely related to the Brazilian *S. daphnoides*, but that has much narrower leaves, described as glabrous. The specimens referred here to *S. peruvianus* are variable in pubescence, but since both densely hairy and almost glabrous forms were collected at Pebas, the pubescence is probably either fugitive or else variable.

ARALIACEAE

Gilibertia arborea (L.) March.—A new local name accompanies a specimen of this species examined recently: Mexico: Fortín, Veracruz, March, 1883, *E. Kerber 380* (herb. Leningrad). Vernacular name, “tamalcoahuite.”

OLEACEAE

Forestiera racemosa Wats. Proc. Amer. Acad. 25: 158. 1890.

The species was described from the Sierra Madre near Monterrey, and has been collected heretofore only in Nuevo León. The following collection confirms its occurrence in another state:

Mexico: Limestone ledges, Cerro de los Armadillos, Sierra de San Carlos, Tamaulipas, July, 1930, *H. H. Bartlett 10208*.

***Osmanthus americana* (L.) Benth. & Hook. ex Gray, Syn. Fl. 2, pt. 1: 78. 1878. *Olea americana* L. Mant. Pl. 24. 1767.**

A remarkable extension of range is indicated by the collection cited below, which was obtained in northeastern Mexico. This shrub, which ranges rather widely in the southeastern United States, reappears in southern Mexico, in Oaxaca and perhaps elsewhere. Its curious distribution is matched, however, by that of certain other plants, striking examples being *Gelsemium* and *Illicium floridanum*. One might well expect the Mexican *Osmanthus* to represent a distinct species, but I see no clear differences, if any at all, between the specimen from Tamaulipas and others from Florida.

Mexico: Mesa de Tierra, near San José, Sierra de San Carlos, July, 1930, *H. H. Bartlett 10263*; a shrub 1.8–3 meters high.

MYRSINACEAE

***Ardisia stenobotrys*, sp. nov.**—Folia magna crasse membranacea brevipetiolata in sicco cinereo-viridia, petiolo 2–3 cm. longo late marginato; lamina lineari-oblongata c. 39 cm. longa 8 cm. lata versus apicem acutiusculum breviter angustata, basin versus longe sensimque attenuata glabra dense minute pellucidopunctata, costa nervisque utrinque plus minusve prominentibus, nervis lateralibus utroque latere c. 25 angulo fere recto divergentibus; inflorescentia terminalis (?) glabra 20 cm. longe pedunculata, 22 cm. longa atque 4 cm. lata, floribus in umbellas plurifloras dispositis, umbellis c. 19 racemosis 6–14 mm. longe pedunculatis, pedicellis supra valde incrassatis c. 8 mm. longis, bracteis caducis; sepala 5 contorta late ovata obtusa 4.5 mm. longa eciliata impunctata; petala leviter contorta triangulari-oblonga 1 cm. longa punctis et lineis destituta acuta in anthesi recurva; stamina exserta, filamentis gracillimis 4 mm. longis, antheris sagittato-linearibus 7 mm. longis.—Brazil: State of Amazonas, Rio Maturacá, below Salto de Huá, December, 1930, *E. G. Holt & E. R. Blake 521* (herb. Field Mus. No. 640,133, type).

A remarkable plant, quite unlike any of the American species described by Mez. It is most noteworthy for its large, narrow, much elongate leaves, and for the long narrow inflorescence, a simple raceme of numerous stalked several-flowered umbels.

***Rapanea Lehmannii*, sp. nov.**—Frutex vel arbor omnino glabra, ramulis crassis angulatis fuscis versus apices dense foliatis; folia parva crasse coriacea, petiolo crasso 3–6 mm. longo latiuscule fere ad basin marginato; lamina elliptica vel ovalis 2–3.5 cm. longa 1–1.5 cm. lata apice rotundata vel late obtusa basi breviter cuneato-

angustata in sicco fusca, supra enervis costa impressa, subtus quoque enervis remote punctata costa valde prominente; flores ad nodos umbellato-fasciculati, pedicellis crassis 2-3 mm. longis acute angulatis; sepalia 5 breviter coalita 2.5 mm. longa crassa oblongo-triangularia acutiuscula margine nuda; petala 5 oblonga 3.5-4 mm. longa breviter coalita acutiuscula lineis destituta; antherae petalis paullo breviores late oblongae apice acutiusculae et subincurvae.—Colombia: Páramo de las Delicias, central Andes of Popayán, alt. 3,000-3,500 meters, *F. C. Lehmann* 8459 (herb. Field Mus. No. 578,100, type).

SAPOTACEAE

Lucuma hypoglauca Standl. Trop. Woods 4: 4. 1925.

This exceptionally distinct species was described from Salvador, and it occurs also in Yucatan (see Field Mus. Bot. 3: 380. 1930), where it is called "zapote blanco." A specimen from still farther north, collected almost a century ago, has come to hand recently among miscellaneous Mexican material received for determination from Leningrad: Mexico: Colipa, Veracruz, July 22, 1841, *Karwinsky* 61. The collector reports the vernacular name as "palo de calentura." Although the specimens are sterile, there is practically no doubt regarding their proper reference to *Lucuma hypoglauca*.

ASCLEPIADACEAE

Trichosacme lanata Zucc. Abh. Akad. Wiss. Muenchen 4, pt. 2: 11. 1845.

This curious vine of the family Asclepiadaceae, with extraordinary flowers of striking appearance, was described originally from Mexico, without indication of the exact locality at which it was collected. There is in the herbarium of Field Museum a photograph of an authentic specimen in the Berlin Herbarium, received "ex hort. Monacens." I have seen a specimen of *Karwinsky* 457 in the Leningrad herbarium, that represents the same plant.

It is of interest to record the receipt of a new collection of *Trichosacme lanata* from Mexico, for the first time one with definite locality data, as follows: Thicket near San Vicente, vicinity of Jaumave, Tamaulipas, November 1, 1931, *H. W. von Rozyński* 210. The collection is in fruit. Besides the curious flowers, the plant is noteworthy for the exceedingly dense and copious, white tomentum that invests all its parts.

CONVOLVULACEAE

Exogonium Woronovii, sp. nov.—Volubilis herbacea, caulibus gracillimis striatis parce breviter pilosulis vel glabratiss; folia medi-

ocria breviter petiolata membranacea viridia, petiolo vulgo c. 1 cm. longo vel in foliis superioribus multo brevior dense patenti-piloso; lamina ovata vel triangulari-ovata 3.5–9 cm. longa 1.5–7 cm. lata integra longiacuminata basi profunde anguste cordata, auriculis late rotundatis, utrinque densiuscule breviter pilosula; flores cymosi, cymis axillaribus umbelliformibus 3–5-floris 0.8–2 cm. longe pedunculatis, pedunculis breviter pilosulis, bracteis late ovatis minutis, pedicellis plerumque 5–7 mm. longis supra incrassatis angulatis glabris; sepala valde inaequalia oblonga vel late oblonga 5–9 mm. longa glabra apice obtusa vel late rotundata; corolla coccinea glabra, tubo 3.8 cm. longo gracili versus faucem sensim dilatato et sub orem fere 5 mm. lato, lobis patentibus vel adscendentibus anguste triangulari-oblongis attenuato-acuminatis c. 1 cm. longis; antherae longe exsertae; capsula ovoidea glabra acutiuscula 12 mm. longa; semina immatura minute puberula.—Mexico: Rodillo del Diablo near Uruapan, Michoacán, January 20, 1926, G. Woronow 2906 (herb. Field Mus. No. 641,479, type).

Jacquemontia Rozynskii, sp. nov.—Volubilis, ut videtur perennis, caulibus teretibus sparse ramosis albidis densissime stellato-tomentosis, internodiis saepe foliis longioribus; folia mediocria breviter petiolata crassa mollia, petiolo crasso 2–7 mm. longo tomentoso; lamina ovata rotundato-ovata vel oblongo-ovata 2.5–3.8 cm. longa 1.5–2.5 cm. lata integra acuta vel rarius subobtusa basi late rotundata vel leviter emarginata, utrinque subtus densius stellato-tomentosa albida; cymae triflorae axillares subsessiles vel 5 mm. longe pedunculatae, pedicellis crassis usque ad 3 mm. longis vel nullis, bracteis subulatis vel fere filiformibus plerumque sepalis brevioribus dense tomentosis; sepala valde inaequalia 7–11 mm. longa ovata vel lanceolata subulato-acuminata densissime stellato-tomentosa albida; corolla fere 2 cm. longa ut videtur alba c. 2.5 cm. lata extus ad costas sericea aliter glabra vel glabrata; antherae longe exsertae.—Mexico: Mountain slopes near San Vicente, vicinity of Jaumave, Tamaulipas, September 29, 1931, H. W. von Rozynski 46 (herb. Field Mus. No. 648,540, type), 46a.

Related to *Jacquemontia abutiloides* Benth., of the western coast of Mexico. That species differs in its chiefly long-pedunculate cymes, cordate leaves, and distinct pubescence.

Jacquemontia Rusbyana, nom. nov. *J. densiflora* Rusby, Bull. Torrey Club 26: 151. 1899, non Hallier, 1893.

VERBENACEAE

Lantana involucrata L. var. **velutina** (Mart. & Gal.), comb. nov. *L. velutina* Mart. & Gal. Bull. Acad. Brux. 11: 325. 1844.

Most of the Mexican material referable to *Lantana involucrata* differs slightly from the West Indian form, having usually acute or acutish rather than rounded leaves, which are more coarsely crenate and more densely pubescent. There are, however, inter-

mediate forms, and the typical form of the species grows in the Yucatan Peninsula. None of the Mexican specimens seem to deserve specific rank, but they are worthy of varietal designation.

Tamonea curassavica (L.) Pers.—This low, herbaceous or suffrutescent plant has been reported as ranging in Mexico from San Luis Potosí to Veracruz and Yucatan. It extends also into the state of Tamaulipas, as indicated by the following collection: Slope near Jaumave, Tamaulipas, September 29, 1931, *H. W. von Rozyński 40*.

LABIATAE

Satureia oaxacana (Fernald), comb. nov. *Calamintha oaxacana* Fernald, Proc. Amer. Acad. 35: 564. 1900. *Clinopodium oaxacanum* Standl. Contr. U. S. Nat. Herb. 23: 1273. 1924.

The following collection represents a substantial extension of range for the species: Mexico, Maltrata, January, 1883, *E. Kerber 268* (herb. Leningrad). Vernacular name, "poleo."

Satureia laevigata (Standl.), comb. nov. *Clinopodium laevigatum* Standl. Contr. U. S. Nat. Herb. 23: 1273. 1924.

SOLANACEAE

Capsicum Pringlei (Wats.) Macbride & Standl., comb. nov. *Brachistus Pringlei* Wats. Proc. Amer. Acad. 25: 159. 1890.

The plant listed in the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 1303. 1924) as *Brachistus diversifolius* (Klotzsch) Miers should be known as *Capsicum diversifolium* (Klotzsch) Kuntze.

Lycianthes chiapensis (Brandeg.), comb. nov. *Solanum chiapense* Brandeg. Univ. Calif. Publ. Bot. 6: 192. 1915.

Nectouxia formosa HBK. Nov. Gen. & Sp. 3: 11. *pl. 193*. 1818.

Originally described from southern Mexico, this plant is known to range northward into the mountains of northern Mexico. So far as I know, it has not been reported previously as a member of the flora of the United States, but it may now be recorded from western Texas: Chisos Mountains, 1931, *C. H. Mueller 8276*. The species is one of numerous rare ones that were collected in this little-known range during the summer of 1931 by Mr. Mueller.

SCROPHULARIACEAE

Bacopa acuminata (Walt.) Robinson, var. **peninsularis** (Pennell), comb. nov. *Mecardonia acuminata* var. *peninsularis* Pennell, Proc. Acad. Phila. 71: 237. 1919.

Bacopa acuminata (Walt.) Robinson, var. **brevifolia** (Pennell), comb. nov. *Mecardonia acuminata* var. *brevifolia* Pennell, Proc. Acad. Phila. 71: 237. 1919.

Bacopa tenuis (Small), comb. nov. *Mecardonia tenuis* Small, Fl. Southeast. U. S. 1065, 1338. 1903.

Bacopa albida (Pennell), comb. nov. *Monocardia albida* Pennell, Proc. Acad. Phila. 72: 157. 1920.

Bacopa appressa (Pennell), comb. nov. *Caconapea appressa* Pennell, Proc. Acad. Phila. 72: 152. 1920.

Bacopa conferta (Pennell), comb. nov. *Caconapea conferta* Pennell, Proc. Acad. Phila. 72: 153. 1920.

Bacopa lilacina (Pennell), comb. nov. *Monocardia lilacina* Pennell, Proc. Acad. Phila. 72: 156. 1920.

Bacopa peduncularis (Benth.), comb. nov. *Herpestis peduncularis* Benth. Comp. Bot. Mag. 2: 56. 1836.

Calceolaria fruticosa (Pennell), comb. nov. *Fagelia fruticosa* Pennell, Proc. Acad. Phila. 72: 172. 1920.

Calceolaria nevadensis (Pennell), comb. nov. *Fagelia nevadensis* Pennell, Proc. Acad. Phila. 72: 176. 1920.

Castilleja Ortegae, sp. nov.—Herba ut videtur perennis erecta 30 cm. alta et ultra supra sparse laxe ramosa, ramis gracillimis viridibus sparsiuscule pilis fere minutis patentibus albidis glanduloso-pilosulis, laxe foliatis; folia sessilia membranacea laete viridia linearia integra 1.5–4 cm. longa 2–3 mm. lata attenuata, basin versus sensim attenuata, obscure trinervia, ad margines obscure scaberulo-ciliolata, aliter glabra; flores racemosi, racemis 4–5 cm. longis paucifloris rhachi dense glanduloso-pilosa, bracteis oblongis vel lineari-oblongis 5–8 mm. longis acutiusculis glanduloso-pilosulis, superioribus coccineis, inferioribus basin versus viridibus, pedicellis gracilibus suberectis usque ad 6 mm. longis glanduloso-pilosis; calyx coccineus 15–16 mm. longus tenuiter glanduloso-villosulus basi oblique rotundatus fere rectus postice breviter antice profunde fissus, segmentis apice late rotundatis; corolla longe exserta 23–28 mm. longa sparse glanduloso-villosula, galea attenuata luteo-viridi 10–12 mm. longa, labii lobis c. 1.5 mm. longis viridibus obtusis.—Mexico: Tapiquahuit, Municipalidad de San Ignacio, Sinaloa, alt. 475 meters, in moist soil, May, 1931, *J. G. Ortega 6850* (herb. Field Mus. No. 636,832, type).

Castilleja spiranthoides, sp. nov.—Ut videtur annua, caule erecto gracili 25–30 cm. alto et ultra laxiuscule pilis pallidis patentibus viscido-villosulo simplici vel ramos paucos elongatos emittente inferne dense folioso, supra remotius folioso; folia alterna integra anguste linearia 1.5–3.5 cm. longa apicem versus longe anguste attenuata sessilia basi non dilatata viridia densiuscule glanduloso-pilosula uninervia suberecta; flores spicati, spicis simplicibus densis 4–18

cm. longis, rhachi dense viscido-villosa, bracteis lineari-oblongis floribus fere aequilongis laxe villosis supra medium purpureo-rubris apice interdum aliquid dilatatis et obtusis, interdum breviter tridentatis; calyx c. 15 mm. longus purpureo-ruber sparse breviter villosus leviter curvus postice breviter antice profunde fissus; corolla ut videtur pallida vel rubro-viridescens 12–20 mm. longa breviter exserta glabrata, galea tubo fere aequilonga longe attenuata, labio breviter obtuse trilobato; capsula ellipsoidea 6 mm. longa 3.5 mm. lata acutiuscula glabra; semina pallida profunde foveolata.— Mexico: Los Gusanos, San Ignacio, Sinaloa, in dry soil, March, 1931, *Jesús González Ortega 6896* (herb. Field Mus. No. 636,833, type).

Melasma hispidum Benth. in Hook. Comp. Bot. Mag. 1: 202. 1835. *Cacabus hondurensis* Donn. Smith, Bot. Gaz. 56: 60. 1913. *Eutheta hondurensis* Standl. Field Mus. Bot. 8: 325. 1931.

The writer erred in following Captain Smith in his reference of this plant to the Solanaceae, in which, it must be admitted, it would have been a perfectly good new genus! Fruiting specimens of the plant are so much like *Physalis* in gross aspect that the writer does not feel greatly humiliated in having referred his proposed new genus, *Eutheta*, to the Solanaceae rather than to the Scrophulariaceae.

The plants referable to the genus *Seymeria* have been treated monographically by Pennell (Proc. Acad. Phila. 77: 335–373. 1925), who has presented a detailed key for their determination. Unfortunately he has used for the genus the improper name *Afzelia*. Since *Seymeria* Pursh is a conserved name, it can not be replaced by *Afzelia*, even though the latter has priority of publication. The following name changes, therefore, are necessary for the proper listing of the species of this group.

Seymeria latiflora (Pennell), comb. nov. *Afzelia latiflora* Pennell, Proc. Acad. Phila. 77: 354. 1925.

Seymeria laxa (Pennell), comb. nov. *Afzelia laxa* Pennell, Proc. Acad. Phila. 77: 355. 1925.

Seymeria ramosissima (Pennell), comb. nov. *Afzelia ramosissima* Pennell, Proc. Acad. Phila. 77: 357. 1925.

Seymeria stricta (Pennell), comb. nov. *Afzelia stricta* Pennell, Proc. Acad. Phila. 77: 358. 1925.

Seymeria laciniata (Mart. & Gal.), comb. nov. *Gerardia laciniata* Mart. & Gal. Bull. Acad. Brux. 12, pt. 2: 26. 1845. *Afzelia laciniata* Pennell, Proc. Acad. Phila. 77: 359. 1925.

Seymeria madrensis (Pennell), comb. nov. *Afzelia madrensis* Pennell, Proc. Acad. Phila. 77: 361. 1925.

Seymeria sinaloana (Pennell), comb. nov. *Afzelia sinaloana* Pennell, Proc. Acad. Phila. 77: 365. 1925.

Seymeria coahuilana (Pennell), comb. nov. *Afzelia coahuilana* Pennell, Proc. Acad. Phila. 77: 366. 1925.

Seymeria chihuahuana (Pennell), comb. nov. *Afzelia chihuahuana* Pennell, Proc. Acad. Phila. 77: 367. 1925.

Seymeria Havardii (Pennell), comb. nov. *Afzelia Havardii* Pennell, Proc. Acad. Phila. 72: 507. 1921.

Seymeria glandulosa (Pennell), comb. nov. *Afzelia glandulosa* Pennell, Proc. Acad. Phila. 77: 369. 1925.

Seymeria tenuisecta (Pennell), comb. nov. *Afzelia tenuisecta* Pennell, Proc. Acad. Phila. 77: 370. 1925.

Seymeria texana (Gray), comb. nov. *S. bipinnatisecta* var. *texana* Gray in Torr. Bot. Mex. Bound. 117. 1859. *Afzelia texana* Small, Fl. Southeast. U. S. 1072, 1338. 1903.

BIGNONIACEAE

Tabebuia atrovirens (DC.), comb. nov. *Tecoma atrovirens* DC. Prodr. 9: 220. 1845.

Tabebuia chrysotricha (Mart.), comb. nov. *Tecoma chrysotricha* Mart. ex DC. Prodr. 9: 216. 1845.

Tabebuia hypodictyon (DC.), comb. nov. *Tecoma hypodictyon* DC. Prodr. 9: 217. 1845.

Tabebuia impetiginosa (Mart.), comb. nov. *Tecoma impetiginosa* Mart. Syst. Mat. Med. Bras. 54. 1843.

Tabebuia Ipe (Mart.), comb. nov. *Tecoma Ipe* Mart. Syst. Mat. Med. Bras. 55. 1843.

Tabebuia ochracea (Cham.), comb. nov. *Tecoma ochracea* Cham. Linnaea 7: 655. 1832.

GESNERIACEAE

Kohleria Deppeana (Schlecht. & Cham.) Fritsch.—In the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 1327) no local name for this plant was reported. The following collection, therefore, is worthy of special record: Mexico: Fortín, Veracruz, February, 1883, *E. Kerber 324* (herb. Leningrad). Vernacular name, "arete de la India."

RUBIACEAE

Alibertia Duckei, sp. nov.—Arbor parva omnino glabra, ramulis crassiusculis subteretibus fusco-brunneis, internodiis elongatis vel saepe valde abbreviatis; vagina stipularis persistens indurata subtruncata 2–3 mm. alta; folia majuscula graciliter petiolata subcoriacea in sicco fusco-brunnea, petiolo 1.5–2 cm. longo; lamina oblongo-elliptica circa 15 cm. longa et 7 cm. lata apice acuta vel

subobtusa atque abrupte breviter acuminata, acumine anguste triangulari acuminato, basi acuta, supra lucida, subtus pallidior sublucida, costa gracili elevata, nervis lateralibus utroque latere c. 7 gracillimis prominulis arcuatis, nervulis obscuris laxè reticulatis; flores masculi terminales numerosi fasciculati sessiles vel brevissime crasse pedicellati dense congesti, bracteis parvis oblongo-lanceolatis intus sericeis; calyx late campanulatus, tubo 6-7 mm. longo, 6-8 mm. lato, lobis tubo paullo brevioribus anguste triangularibus attenuato-acuminatis minute ciliolatis; corolla viridis coriacea extus glabra, tubo crasso 2 cm. longo basi 5-6 mm. lato supra paullo angustato, lobis 4 elliptico-ovatis subobtusis intus minute puberulis 8-9 mm. longis.—Brazil: Obidos, civ. Pará, silva non inundabili regione Castanhal do Paiol, December 4, 1926, A. Ducke 22917 (herb. Berol., type).

There is much doubt regarding the generic position of this plant, which seems to fit better, however, in *Alibertia* than in any other group of the Gardenieae. In *Alibertia* it is remarkable for its large flowers and especially for the large and deeply lobed calyx. The collector suggests that the flowers may be abnormal, perhaps as the result of insect attacks, but I find no basis for such a belief.

Alibertia hadrantha, sp. nov.—Arbor 27-metralis omnino glabra, ramulis teretibus fusco-brunneis; folia magna breviter petiolata coriacea, petiolo crasso c. 1 cm. longo supra plano subtus rotundato; lamina late elliptica vel oblongo-elliptica 12-18 cm. longa et 7-10 cm. lata vel ultra, apice rotundata et brevissime obtuse acuminata, basi rotundata atque abrupte contracta, breviter decurrens, supra in sicco fusco-olivacea lucida, costa nervisque vix prominentibus, venulis prominulis atque arcte reticulatis, subtus fere concolor, costa crassa elevata, nervis lateralibus utroque latere c. 11 elevatis valde arcuatis angulo lato divergentibus, venis vix prominulis inconspicuis; flores masculi terminales numerosi sessiles densissime capitato-aggregati; hypanthium brevissimum vix 1 mm. longum, calyce campanulato truncato 1.5 mm. longo extus glabro intus sericeo, disco annulari brevissimo; corolla extus glabra coriacea in alabastro 1 cm. longa, tubo cylindraceo recto 4 mm. crasso intus glabro, lobis late ovatis obtusis tubo duplo brevioribus; stamina prope basin tubi inserta, filamentis brevibus, antheris linearibus 8 mm. longis; stylus glaber.—Brazil: Territory of Acre, near mouth of Rio Macauhan, a tributary of Rio Yaco, basin of Rio Purús, on terra firma, September 2, 1933, B. A. Krukoff 5735 (type in herb. N. Y. Bot. Gard.; photo. and fragm. in herb. Field Mus.).

The distinctive characters of the species are the unusually large leaves, the very dense, many-flowered staminate inflorescences, and the short corolla.

Alibertia itayensis, sp. nov.—Frutex 1.5-2-metralis, ramulis gracilibus teretibus fuscis, novellis dense puberulis, internodiis

brevibus; stipulae persistentes erectae triangulares sensim rigido-acuminatae 4–6 mm. longae dense puberulae; folia majuscula opposita breviter petiolata membranacea, petiolo gracili 7–11 mm. longo dense minute puberulo; lamina elliptica vel oblongo-elliptica, interdum obovato-elliptica, 7.5–12.5 cm. longa, 3.5–6 cm. lata, acuta vel abrupte acuta, acumine obtuso, basi acuta, supra in sicco viridescens, ad venas minute puberula, aliter glabra vel glabrata, venis venulisque prominentibus, subtus paullo pallidior, minute puberula vel pilosula vel serius glabrata, costa gracili prominente, nervis lateralibus utroque latere c. 8 gracillimis prominentibus angulo semirecto adscendentibus obliquis fere rectis prope marginem conjunctis, nervulis prominulis laxè reticulatis; flores masculi terminales sessiles c. 3; calyx truncatus cupulatus 1.5 mm. longus puberulus; corolla extus minutissime hispidulo-pilosula, tubo subcurvo 2.5 cm. longo basi fere 4 mm. lato supra sensim angustato, lobis albis 1.5–2 cm. longis oblongis acuminatis patentibus intus glabris; cetera ignota.—Peru: Soledad, on Río Itaya, Dept. Loreto, alt. 110 meters, in dense forest, September, 1929, *E. P. Killip & A. C. Smith 29741* (U. S. Nat. Herb., No. 1,463,008, type).

Closely related to *Alibertia pilosa* Krause, which differs in its smaller staminate flowers and much longer, harsher pubescence.

Alibertia longiflora Schum. in Mart. Fl. Bras. 6, pt. 6: 412. 1889.

Brazil: Top of Serra da Gramma, District Carangola, Minas Geraes, 1,700 meters, February, 1930, *Ynes Mexia 4285*; growing at extreme timber line; a spreading tree 5 meters high, along stream in open campo; flowers white, fragrant; one tree seen.

Alibertia macrantha, sp. nov.—Ramuli graciles teretes, vetustioribus brunnescentibus, novellis dense retrorso-hispidis, internodiis brevibus; stipulae non visae; folia majuscula breviter petiolata opposita membranacea, petiolo 4–8 mm. longo hispido; lamina elliptica vel oblongo-elliptica 8–13.5 cm. longa 3–6 cm. lata subabrupte acuminata, acumine angusto acute attenuato, basi acuta, supra sparse ad venas densius pilis longis patentibus hirsuta vel glabrata, venis venulisque prominulis, subtus densiuscule hirsuta, costa gracili elevata, nervis lateralibus utroque latere c. 8 gracillimis prominentibus angulo semirecto adscendentibus obliquis prope marginem conjunctis, nervulis prominulis laxè reticulatis; flores masculi terminales sessiles pauci; calyx cupulatus truncatus hispidulus 1.5–2 mm. longus; corolla alba, tubo subcurvo incrassato 4 cm. longo basi 4 mm. lato supra sensim angustato pilis brevibus patentibus hispidulo, lobis 5 anguste lanceolato-oblongis 3–3.5 cm. longis 8–10 mm. latis breviter acuminatis, prope basin subcontractis patentibus intus glabris, extus sparse hispidulis.—Brazil: Barreiras de Tabatinga, Rio Juruá, upper Amazon region, November 13, 1874, *J. W. H. Traill 449* (herb. Kew., type).

In the form of its leaves and flowers and in pubescence this plant is like *Alibertia pilosa* Krause, of the same general region. That species differs notably in its much smaller staminate flowers.

Alibertia macrophylla Schum. in Mart. Fl. Bras. 6, pt. 6: 394. 1889.

Of the specimens seen by the writer the following apparently are referable to this species: Brazil: Maranhão, *Pohl 5116* (photo. of type ex herb. Berol.). Without locality, *Spencer Moore 540* (photo. ex herb. Berol.). Cuyabá, Matto Grosso, *G. O. A. Malme 1853* (herb. Stockholm). Cuyabá, in "cerrado" subruderali, *Malme*, December 4, 1902 (S). Without locality, *Burchell 8234* (herb. Kew., herb. Paris).

Burchell states that the vernacular name is "mermelada d'espinha," and that the plant is a shrub of 2-3 meters. The three-celled globose solitary fruits, about 3 cm. in diameter, are densely covered with short spinelike projections. At maturity they are black and edible. Among the species of *Alibertia* this is easily recognized by its tuberculate fruit, which was not described by Schumann, although he states that the ovary is tuberculate. *Spencer Moore 540* was distributed as a new species of *Alibertia*.

Alibertia uniflora, sp. nov.—Arbuscula (?) omnino glabra, ramulis gracilibus rigidis, vetustioribus pallidis rimosis, novellis gracilibus pallide brunneis teretibus vel subangulatis, internodiis elongatis vel saepe valde abbreviatis; stipulae in vaginam incrassatam truncatam 1.5-2 mm. longam connatae; folia parva breviter petiolata coriacea, petiolo crassiusculo 3-5 mm. longo; lamina elliptica vel oblongo-elliptica 3.5-6 cm. longa 1.5-3 cm. lata abrupte acuminata acumine triangulari obtuso, basi acuta, supra in sicco fusca lucida, costa impressa, nervis venisque pallidis vix elevatis, subtus pallidior brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 8 gracillimis prominulis subar-
cuatis angulo latiusculo adscendentibus ante marginem junctis, venulis obsoletis; flores terminales solitarii sessiles, bracteolis in cupulam truncatam 1.5 mm. longam connatis; calyx truncatus 2 mm. longus resinosus; corolla in alabastro acuta 6 mm. longa extus dense sericea et resinosa, lobis tubo brevioribus.—British Guiana: Roraima, 1842-43, *Schomburgk 694* (herb. Paris, type).

The plant is easy of recognition because of the solitary staminate flowers. The foliage is similar to that of *A. myrciifolia* Schum.

Alseis peruviana, sp. nov.—Arbor, ramulis obtuse tetragonis vel subteretibus crassis densissime fulvo-hispidulis; stipulae deciduae 1-1.5 cm. longae ovatae acuminatae dense adpresso-pilosae; folia

magna fere sessilia opposita membranacea, petiolo 0.5–2.5 cm. longo fulvo-hispidulo; lamina rhombeo-oblancoolata vel cuneato-obovata 21–37 cm. longa 7–18 cm. lata acuta vel acuminata basin versus longissime sensim attenuata, supra in sicco fusca vel viridescens, densiuscule breviter patenti-pilosa, costa venisque prominulis, subtus fere concolor, densius pilis brevibus patentibus vel subadpressis fulvis hispidula, costa crassiuscula elevata, nervis lateralibus utroque latere c. 20 gracilibus prominentibus angulo latiusculo interdum fere recto adscendentibus subobliquis, nervulis prominulis arcte reticulatis; inflorescentiae terminales, floribus spicatis, spicis congesto-paniculatis 6–17 cm. longis c. 1 cm. crassis longe attenuatis dense multifloris, rhachi crassa dense fulvo-hispidula, floribus rectangule patentibus, dense fasciculatis et congestis, arcte sessilibus, bracteis ferrugineis anguste linearibus attenuatis glabris patentibus persistentibus floribus paullo brevioribus; hypanthium late oblongum 1.2 mm. longum densissime fulvo-hispidulum, calyce 6-partito aequilongo, laciniis glabris vel glabris inaequalibus lanceolato-oblongis acutis; corolla tubuloso-urceolaris 2.5–3 mm. longa extus dense minute fulvo-hispidula, lobis brevissimis incurvis; stamina inclusa; styli rami exserti crassiusculi recurvi.—Peru: Puerto Arturo, Yurimaguas, Dept. Loreto, in forest, alt. 200 meters, November 15, 1929, *Llewelyn Williams 5030* (herb. Field Mus. No. 623,099, type). Juan Guerra, near Tarapoto, Dept. San Martín, December 30, 1929, *Williams 6916* (sterile).

Vernacular names, “mishu-quiroy” and “palo blanco.”

No species of *Alseis* has been reported hitherto from Peru. This one is a relative of the Brazilian *Alseis floribunda* Schott, which has usually larger flowers and long-exserted stamens.

Amaioua ursina Standl. Field Mus. Bot. 8: 168. 1930.

The species was based upon two collections from British Guiana. It may now be reported from another country: French Guiana: *Mélinon* (herb. Paris).

Amphidasya, gen. nov.—Frutices erecti vel herbae, caulibus simplicibus crassis; stipulae intrapetiolares magnae persistentes multifidae, laciniis numerosis linearibus vel filiformibus inaequalibus; folia opposita (vel interdum alterna?) magna membranacea longipetiolata integra; flores mediocres in axillis dense aggregatis, bracteis multifidis magnis persistentibus floribus longioribus; hypanthium turbinatum vel oblongum; calycis lobi lineares vel fere filiformes maxime elongati saepe insuper paullo dilatati et interdum colorati; corollae tubus gracilis elongatus, supra vix ampliatus, lobis angustis oblongis tubo brevioribus; antherae lineares dorsifixae inclusae; ovarium biloculare; bacca oblonga vel oblongo-clavata; semina numerosissima ferruginea minuta.

Type species, *Sabicea ambigua* Standl.

Amphidasya ambigua (Standl.), comb. nov. *Sabicea ambigua* Standl. Field Mus. Bot. 7: 49. 1930.

Colombia: Type collected in Colombia, without definite locality, *Triana 1847* (herb. Kew.). Coteje, Río Timbiquí, *Lehmann BT519* (herb. Kew.). Intendencia del Chocó, La Concepción, 15 km. east of Quibdó, 75 meters, April–May, 1931, *Archer 1993* (U. S. Nat. Herb.). Provincias de Chocó y Barbacoas, *Triana 1847* and *1848* (herb. Paris); vernacular name “yerba de maleficio.”

The Archer collection is by far the best and most ample that I have seen of this plant. The collector states that it has a single stem and is a shrub 30–100 cm. high; the bracts and calyx lobes are white.

Also to be referred to the genus is the following plant:

Amphidasya umbrosa (Wernham), comb. nov. *Sabicea umbrosa* Wernham, Monog. *Sabicea* 27. pl. 1, f. 1. 1914.

The two plants are clearly congeneric, but differ conspicuously in foliage and flower characters. They are similar in habit, leaf size, inflorescence, and especially in their strange stipules and bracts. Wernham referred the second species without hesitation to *Sabicea*, merely remarking that it was the only American representative of the subgenus *Stipulariopsis*, otherwise African. The two Colombian plants diverge so conspicuously from even the African species of *Sabicea* that it does not seem reasonable to refer them to the same genus. None of the Colombian material thus far available is completely satisfactory for study, especially of the flower and fruit characters, but it seems to me that the nature of the stipules alone is quite enough to afford a basis for segregating the Colombian plants as a distinct genus. It is probable that when complete material has been assembled for examination, other good characters will be found for separating the genera even more clearly. One familiar with the genus *Sabicea*, upon seeing either of the Colombian plants, is not likely to suspect their relationship with that group.

Amphidasya bullata, sp. nov.—Caulis crassus dense breviter pilosulus; stipulae virides c. 2.5 cm. longa herbaceae fere ad basin multifidae, laciniis subulatis dense sordide puberulis; folia opposita vel alterna longe petiolata firme membranacea, petiolo gracili 4.5–6.5 cm. longo dense et patule fulvo-pilosulo; lamina oblongo-elliptica vel obovato-elliptica 13–14.5 cm. longa 6–7 cm. lata abrupte cuspidato-acuminata, acumine anguste triangulari longe attenuato c. 1 cm. longo, basi acuta vel obtusa, valde bullata, supra in sicco fusco-viridis, glabra, venis valde impressis, subtus paullo pallidior, ad venas densissime patule pilosula, costa gracili elevata, nervis

lateralibus utroque latere c. 15 gracilibus elevatis angulo latiusculo adscendentibus obliquis subarcuatis prope marginem conjunctis, nervulis prominentibus et laxe reticulatis; flores in axillis dense aggregati numerosi sessiles vel subsessiles, bracteae stipulis conformibus et aequilongis; calyx ad basin partitus, laciniis viridibus linearitenuatis 1–1.5 cm. longis vel ultra dense fulvo-puberulis; bacca clavato-oblonga c. 1 cm. longa et 4 mm. crassa basin versus paullo attenuata sparse puberula calyce persistente coronata.—Colombia: Provincias de Chocó y Barbacoas, "alt. 100" (meters?), May, 1853, *J. Triana 3315* (herb. Paris, type).

Vernacular name, "yerba de maleficio."

The present plant is obviously related to *A. umbrosa* and *A. ambigua*. It resembles more closely *A. umbrosa*, but the latter has much larger leaves on greatly elongate petioles, and the blades are not bullate as in the plant here described.

Anisomeris laxiflora, sp. nov.—Ramuli graciles teretes recti fusco-ferruginei lenticellati ad nodos sparse adpresso-hispidi, internodiis elongatis foliis brevioribus; stipulae lanceolato-triungulares acuminatae 3–4 mm. longae erectae sparse adpresso-hirsutae; folia mediocria breviter petiolata subcoriacea in sicco fusca, petiolo crassiusculo 3–6 mm. longo sparse hispido; lamina elliptica vel oblongo-elliptica 8–14.5 cm. longa 4–7.5 cm. lata abrupte breviter obtuso-acuminata, basi obtusa vel acuta, supra glabra, subtus paullo pallidior ad costam nervosque sparse adpresso-hispida vel glabrata, in axillis interdum dense barbata, costa gracili elevata, nervis lateralibus utroque latere c. 6 angulo semirecto adscendentibus leviter arcuatis prominentibus prope marginem junctis, venulis obscuris laxissime reticulatis; inflorescentiae terminales vel ex axillis supremis nascentes graciliter 2–4 cm. longe pedunculatae cymosae laxae multiflorae basi trichotomae densae 2–6 cm. latae, ramis sparse hispidulis vel glabris, floribus 1–3 mm. longe pedicellatis vel ex parte sessilibus, bracteis minutis vel obsoletis; hypanthium clavatum basi acutum 2–2.5 mm. longum sparsissime adpresso-hispidulum vel glabrum, calyce 1 mm. longo breviter lobato, lobis semiorbicularibus apice rotundatis; corolla extus sparse strigosa, tubo gracili 11–12 mm. longo superne vix dilatato, lobis 2.5 mm. longis patentibus ovato-oblongis obtusis intus glabris; antherae subexsertae recurvae; drupa bilocularis cylindracea 8–10 mm. longa fere 3 mm. lata glabra apice calyce persistente coronata.—Colombia: Without locality, *José Celestino Mutis 3673* (U. S. Nat. Herb. No. 1,560,379, type; fragm. in herb. Field Mus.), 2955, 779.

Remarkable for the lax, many-flowered inflorescence, which, like the corollas, is strongly suggestive of some species of *Rondeletia*.

Arcytophyllum ericoides (Willd.), comb. nov. *Hedyotis ericoides* Willd. ex R. & S. Syst. Veg. 3: 527. 1819. *Arcytophyllum parvifolium* Krause, Bot. Jahrb. 40: 313. 1908. *A. virgatum* Standl. Field Mus. Bot. 4: 325. 1929.

When *A. virgatum* was described as new, no material of *A. parvifolium* was available for comparison, but judging from description alone, the plant published as *A. virgatum* appeared to be quite distinct. A photograph and fragment of the type specimen of *A. parvifolium* received from the Berlin herbarium show clearly that the two plants are identical. There is at hand also a photograph of the type specimen of *Hedyotis ericoides*, from the Willdenow Herbarium, and this seems to represent the same species. Weddell in the *Chloris Andina* considered *Hedyotis ericoides* a mere variety of *H. thymifolia* R. & P., but the two are quite different, as species go in this genus of closely related forms. *Hedyotis ericoides* was described from the high mountains of Colombia, but it has not been collected recently in that country. It is known also from Peru.

Arcytophyllum filiforme (R. & P.), comb. nov. *Hedyotis filiformis* R. & P. Fl. Peruv. 1: 57. pl. 87, f. b. 1798. *H. conferta* R. & P. loc. cit. pl. 87, f. a. 1798.

So far as I am able to determine from examination of a considerable number of specimens, including authentic material, the plants to which the names listed above apply are conspecific. There are numerous other synonyms, which it is not necessary to list here.

Arcytophyllum Macbridei, sp. nov.—Frutex erectus dense ramosus usque ad 30 cm. altus vel ultra, ramis crassis, ramis vetustis defoliatis sed stipulis persistentibus vestitis, crassis rigidis saepe plus minusve tortuosis, junioribus omnino stipulis occultis; stipulae subimbricatae triangulari-ovatae glabrae vel puberulae apice setis numerosis brevibus vel saepius valde elongatis onustae; folia subsessilia lanceolato-oblonga vel lineari-oblonga 3–11 mm. longa glabra rigida coriacea apice acuta vel acutiuscula mutica basi obtusa lucidissima scaberulo-ciliata supra ad costam sulcata, subtus pallidiora obtuse carinata, subdivaricata vel adscendentia et saepe subrecurva; flores numerosi ad apices ramorum dense capitato-congesti et capitulum globosum interdum efformantes sessiles; hypanthium globosum glabrum; sepala erecta rigida acuta 2–3 mm. longa ovato-oblonga acuta erecta; corolla c. 6 mm. longa extus glabra, lobis patentibus oblongis acutiusculis intus glabris; antherae exsertae; capsula subglobosa c. 2.5 mm. longa.—Peru: Without locality, *Weberbauer 6102* (herb. Field Mus. No. 618,875, type). Trail from Chachapoyas to Moyobamba, *Williams 7576*. Tambo de Laurel, between Dunia and Chachapoyas, Dept. Amazonas, *Raimondi 1048* (herb. Berol.). Cutervo, Dept. Cajamarca, *Raimondi 4968* (B), 4679 (B); *Jelski 6266* (B).

Heretofore I have confused material of this species with *A. setosum* (R. & P.) Standl., to which it is most closely related. In *A. setosum*,

however, the leaves are distinctly setiferous at the apex, and there are other but less conspicuous differences between the two species.

Bathysa Nicholsonii Schum. in Mart. Fl. Bras. 6, pt. 6: 236. 1889.

Brazil: Viçosa, on bank above small valley, Minas Geraes, 680 meters, January, 1930, *Ynes Mexia 4211a*; a slender tree 10 meters high; bark light gray; flowers green; only one tree found. Viçosa, Fazenda de Grasiúma, 700 meters, on wooded slope associated with bamboo and taller trees, 700 meters, May, 1930, *Mexia 4695*; a tree 8 meters high; leaves sometimes 63 cm. long and 31 cm. wide; fruit green and dry; occasional.

Both the collections cited have almost glabrous leaves, those of the typical form being copiously pubescent. The second of the collections has capsules as much as 7 mm. long, almost twice as large as described by Schumann. I believe, however, that both specimens represent mere forms of *B. Nicholsonii*.

Borreria Bradei, sp. nov.—Perennis (?), erecta, herbacea vel suffruticosa usque ad 40 cm. alta ramosa, caulibus gracilibus rigidis subteretibus vel subangulatis luteo-viridibus glabris, internodiis plerumque foliis longioribus; vagina stipularis 1.5–2 mm. longa pilosa setis paucis subulatis 3–4 mm. longis pilosulis instructa; folia parva in sicco luteo-viridia lanceolata vel oblongo-lanceolata 12–20 mm. longa 3–7 mm. lata acuminata basi in petiolum brevem attenuata, supra scaberula costa nervisque plus minusve impressis, subtus pallidiora sparse pilis longis albidis rigidis pilosa, costa nervisque paucis valde elevatis, margine revoluta; flores capitati, capitulis plerumque terminalibus 1–2 axillaribus interdum axillis supremis insertis 8–10 mm. latis densissime multifloris, terminalibus bracteis foliaceis 2 usque ad 7 mm. longis fulcratis, bracteis patentibus fere liberis, floribus arcte sessilibus; hypanthium anguste clavatum glabratum 2 mm. longum; sepala 4 lineari-attenuata 3 mm. longa erecta sparse pilosula; corolla alba extus prope apicem hispidula aliter glabra 4–4.5 mm. longa, tubo crasso supra vix dilatato, lobis 4 rotundatis tubo duplo brevioribus; stamina in fauce corollae inserta subexserta, filamentis brevibus gracillimis glabris, antheris late oblongis brevibus; stylus filiformis apice profunde bifidus, ramulis gracillimis.—Brazil: State of Rio de Janeiro, Therezopolis, Pedra Chapadão, alt. 1,950 meters, November 8, 1929, *A. C. Brade 9953* (Mus. Nac. Rio de Jan. No. 22770; type specimen in herb. Berol.).

As indicated by the bright yellow coloration of the dried specimens, as well as by the bifid style, the plant belongs to Schumann's group *Latifoliae*, and it is related to *Borreria latifolia* (Aubl.) Schum. The latter is a prostrate or procumbent plant of distinctive appearance with numerous flower heads, nearly all of which are axillary.

Borreria Dussii, sp. nov.—Herba perennis saepe suffruticosa ramosa, ramis gracilibus et elongatis vel interdum brevibus crassisque subteretibus vel subangulatis, vetustioribus ferrugineis glabris, internodiis foliis brevioribus; vagina stipularis laxa fere 2 mm. longa plus minusve scabra setis paucis rigidis c. 1 mm. longis ciliata; folia mediocria vel parva oblonga vel elliptico-oblonga 5–24 mm. longa 2.5–7 mm. lata obtusa vel acuta basi in petiolum brevem acute angustata carnosula et in sicco saepe subcoriacea glabra, saepe scaberulo-ciliata, 1-nervia, subtus paullo pallidiora; flores in capitula terminalia densa multiflora aggregata, capitulis 6–7 mm. latis subglobosa foliis 2 involucrata; hypanthium glabrum, sepalis 4 spathulatis apice obtusis vel rotundatis carnosis erectis 1.5 mm. longis; corolla glabra c. 2 mm. longa, lobis 4 acutiusculis; capsula glabra fere 2 mm. longa calyce coronata septicida bivalvis.—Guadeloupe: Seacoast, Vieux Fort, *Duss* (herb. Paris, type). Without locality, *Duss* 2775 (herb. Field Mus., sterile). Vieux Fort, dry rocky places of littoral savannas, in 1893, *Duss* 312 (P). Without locality, in 1841, *Perrottet* (P); *L'Herminier* (P). Without locality, probably from Guadeloupe (herb. Guyanensi), *L. C. Richard* (P).

The material of this apparently distinct species, although consisting of several collections, is not in altogether satisfactory condition for study, the best sheet being the last one cited, which is not accompanied by locality data. The plant appears to be related to *B. laevis* (Lam.) Griseb., but differs conspicuously in habit and leaf characters, as well as in the form of sepals and capsules. I have seen no similar specimens from other Antillean islands.

Borreria latifolia (Aubl.) Schum.—There may be mentioned here a recent collection of this species, worthy of note only because of the data accompanying it: Colombia: Quibdó, Río Atrato, Intendencia del Chocó, *W. A. Archer* 2105 (U. S. Nat. Herb.). The vernacular name is reported as “yerba dulce,” and it is stated that the weedy plant is employed in local medicine because of its supposed diuretic properties.

Borreria suaveolens Mey. var. **linoides** (DC.), comb. nov. *Borreria linoides* DC. Prodr. 4: 548. 1830. *B. tenella* (HBK.) Cham. & Schlecht. var. *linoides* Schum. in Mart. Fl. Bras. 6, pt. 6: 55. 1888.

Borreria suaveolens Mey. var. **platyphylla** (Schum.), comb. nov. *B. tenella* (HBK.) Cham. & Schlecht. var. *platyphylla* Schum. in Mart. Fl. Bras. 6, pt. 6: 55. 1888.

Borreria vulpina Standl. Field Mus. Bot. 8: 389. 1931.

Of this distinct species, recently described, a second collection has come to hand recently: Ariça near Cuyabá, State of Matto Grosso, Brazil, in “cerrado” arenoso subhumido, May, 1903, *G. O.*

A. Malme 3252 (herb. Stockholm). The plants are immature, and without mature fruit, hence it still is impossible to determine whether the species is more properly referable to *Borreria* or *Mitracarpus*.

Borreria Wunschmanni Schum. in Mart. Fl. Bras. 6, pt. 6: 53. 1888.

The following collection apparently is referable to this rare species: Santo Antonio, Matto Grosso, Brazil, loco argillaceo subhumido parce graminoso, December, 1893, *G. A. Malme 1248* (herb. Stockholm). I have seen no material of the species, but there is in the herbarium of Field Museum a photograph of *Burchell 8977*, and this agrees perfectly with the Malme collection. Schumann seems to have exaggerated somewhat his description of the bractlets and sepals, if the new material is conspecific with the collections that he cites.

Bouvardia Loeseneriana, sp. nov.—Frutex ramosus, ramis subteretibus glabris fusco-brunnescentibus, vetustioribus pallide cinnamomeis vel albidis, internodiis plerumque elongatis; stipulae in vaginam persistentem subtruncatam apice setis paucis elongatis onustam connatae; folia opposita crasse membranacea breviter petiolata, petiolo 3–5 mm. longo crassiusculo longe ciliato; lamina ovata vel late elliptico-ovata 2.5–5 cm. longa 1.5–3.5 cm. lata acuta vel breviter sensimque acuminata basi late rotundata vel subcordata ciliata sed aliter glabra, supra in sicco fusca interdum sublucida nervis subimpressis venulis plus minusve prominulis, subtus conspicue pallidior, nervis ut costa prominentibus plerisque prope basin nascentibus angulo acuto arcuato-adscendentibus, venulis obsoletis; flores ad apices ramulorum cymoso-corymbosi numerosi conferti brevissime crasse pedicellati, inflorescentia basi foliaceo-bracteata; hypanthium c. 1 mm. longum subglobosum glabrum, calyce 4–5 mm. longo vel post anthesin accrescente profunde lobato, laciniis anguste triangularibus vel triangulari-lanceolatis longe attenuatis ad margines scaberulis viridibus; corolla ut videtur albida extus dense minute papilloso-puberula, tubo gracili 15–18 mm. longo supra sensim dilatato, lobis oblongo-ovalibus 3–4 mm. longis obtusis suberectis; stylus gracilis lobis corollae paullo longior. —Mexico: Texquitlán near Chilapa, Guerrero, October 26, 1929, *L. Schultze 89* (type in herb. Berol.).

Perhaps a relative of *Bouvardia multiflora* (Cav.) Schult., of the same general region, but in that species the corolla is glabrous outside. The fine dense pubescence of the corolla seems to be distinctive for *B. Loeseneriana*.

The present species is named for Dr. Th. Loesener, whose systematic studies have added much to the present knowledge of the Mexican flora.

Bouvardia multiflora (Cav.) Schult. in R. & S. Syst. Veg. Mant. 3: 118. 1827. *Aeginetia multiflora* Cav. Anal. Cienc. Nat. 3: 131. 1801. *B. xylostoides* Hook. & Arn. Bot. Beech. Voy. 428. 1840.

In the *North American Flora* (32: 111. 1921) *Bouvardia xylostoides* Hook. & Arn. was listed as a doubtful species, with the suggestion that it might not be a member of the genus *Bouvardia*. A specimen of the type collection—*Andrieux 333* collected near Oaxaca, Mexico—has been seen recently by the writer among the Rubiaceae of the Delessert Herbarium. The plant is clearly *Bouvardia multiflora*, although the leaves are somewhat smaller than normal for that species. *Andrieux 224* from Mexico represents the same form, which is not worthy of separation even as a variety.

Bouvardia villosa Standl. N. Amer. Fl. 32: 107. 1921.

Mexico: Lower mountains near Mitla, Oaxaca, July, *G. Andrieux 335* (herb. Delessert).

Calycophyllum Spruceanum (Benth.) Hook. f. ex Schum. in Mart. Fl. Bras. 6, pt. 6: 191. 1889. *Eukylista Spruceana* Benth. Kew Gard. Misc. 5: 230. 1853.

There may be reported a further Bolivian collection of the species, of interest because the native name is given with the specimen: Bolivia: In forest, Río Palometilla, Dept. Santa Cruz, 400 meters, *Steinbach 7905* (herb. Stockholm). Vernacular name, "bayabochi."

Cephaelis cotejensis, sp. nov.—Arbuscula 4-metralis, ramulis crassis subteretibus glabris, internodiis 2–4 cm. longis; stipulae perfectae non visae; folia magna decussata membranacea brevissime petiolata, petiolo crasso 1–2.5 cm. longo; lamina late oblanceolata-oblonga 27–35 cm. longa 9–12 cm. lata apice late obtusa vel rotundata et breviter abrupte protracta, acumine oblongo-triangulari obtuso c. 8 mm. longo, basin versus longissime sensim attenuata, supra in sicco fusco-olivacea glabra costa prominente nervis vix elevatis, subtus pallidior ubique dense minute scaberulo-puberula, costa gracili elevata, nervis lateralibus utroque latere c. 25 gracilibus prominentibus arcuatis angulo lato adscendentibus in marginem desinentibus, nervulis prominulis laxae reticulatis; inflorescentia terminalis subsessilis densissima spiciformis 10–16 cm. longa 3.5 cm. lata, bracteis numerosissimis imbricatis late rotundatis vel orbiculari-spathulatis vel apice fere truncatis 1.5 cm. longis vel ultra et aequilatis dense puberulis crassis; drupae 5 mm. longae.—Colombia: Coteje on Río Timbiquí, alt. 300 meters or less, November, 1898, *F. C. Lehmann 9022* (type in herb. Berol.).

According to the collector, the flowers are flesh-red and the bracts magenta-red. The flowers are so poorly preserved that I have not been able to describe their structure.

This plant must be a strikingly showy one in life, and it represents a clearly distinct and more or less abnormal species for the genus. It is a relative of *Cephaelis Trianae* Standl., also Colombian, but in that the leaves have only about thirteen pairs of nerves, and the inflorescences are but 4–4.5 cm. long.

***Cephaelis crassifolia* Standl.** Field Mus. Bot. 7: 77. 1930.

For this species a second collection is now available for study: Colombia: Intendencia del Chocó, La Concepción, 15 km. east of Quibdó, 75 meters, April–May, 1931, *W. A. Archer 2088* (U. S. Nat. Herb.). A slender tree 6 meters high; fruit black.

***Cephaelis crebrinervia*, sp. nov.**—Frutex omnino glaber, ramulis crassis subteretibus fuscis rimosis, internodiis abbreviatis; stipulae in vaginam 2 mm. longam incrassatam connatae, vagina in lobos 4 breves erectos lineari-subulatos desinente; folia majuscula breviter petiolata opposita papyracea, petiolo gracili 9–12 mm. longo; lamina oblonga vel oblanceolata-oblonga 14–21 cm. longa 4.5–7 cm. lata abrupte acuminata vel cuspidato-acuminata, acumine 1–1.5 cm. longo acuto, basin versus longiuscule sensim angustata, supra in sicco cinereo-viridis, costa venisque prominulis, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 25, aliis 1–3 fere aequalibus parallelis inter paria interpositis, tenerimis prominentibus angulo lato fere recto divergentibus fere rectis prope marginem conjunctis, nervulis vix prominulis laxè reticulatis; inflorescentia terminalis capitata erecta 4 cm. longe pedunculata corollis exclusis 1 cm. longa et 2 cm. lata dense multiflora basi 4-bracteata, floribus dense congestis sessilibus; bracteae exteriores oblongo-lanceolatae liberae 8–10 mm. longae patentes attenuatae concavae; hypanthium obconicum 1 mm. longum, calyce late campanulato 1.5 mm. longo subtruncato vel remote repando-denticulato; corolla alba extus glabra in alabastro apice acuta et brevissime corniculata, tubo gracili 14 mm. longo fauce abrupte late dilatato intus non barbato, lobis 5 linearibus patentibus 5 mm. longis acutis intus glabris; antherae 5 oblongo-lineares semiexsertae.—Brazil: In silvis non inundatis loco Antonio Lemos prope flumen Tajapurú aestuarii amazonici, civ. Pará, September 27, 1919, *A. Ducke 15351* (herb. Berol.).

The relationship of the plant is obscure, and it is not altogether satisfactory to refer the species to the genus *Cephaelis*, although the form of the inflorescence seems to necessitate its reference there. The leaves, with their close venation, suggest those of some of the Brazilian species of *Ixora*.

***Cephaelis hastisepala* (Muell. Arg.) Standl.** Field Mus. Bot. 8: 375. 1931. *Psychotria hastisepala* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 350. 1881.

Brazil: Fazenda de Grasiúma, Viçosa, Minas Geraes, 700 meters, in forest on slope, *Ynes Mexia 4704*; a shrub 3 meters high; fruit bright purple when mature; abundant, singly and in colonies, widespread in woods. Viçosa, 690 meters, on hills in cut-over woods, *Mexia 4370*; a shrub with waxy-white flowers; corolla early deciduous; occasional.

Cephaelis Malmei, sp. nov.—Frutex arborescens 2–3-metralis praeter inflorescentias omnino glaber, ramulis gracilibus rigidis subteretibus olivaceis, internodiis brevibus vel usque ad 2.5 cm. longis; stipulae persistentes incrassatae 2–3 mm. longae breviter subulato-apiculatae; folia mediocria vel melius subparva breviter petiolata crasse membranacea, petiolo crassiusculo 4–8 mm. longo; lamina oblanceolato-oblonga vel obovato-oblonga 6–12 cm. longa 2.4–4.5 cm. lata abrupte vel sensim acuminata, acumine angusto attenuato acuto, basi cuneato-attenuata vel interdum abrupte contracta et decurrens, supra in sicco laete olivaceo-viridis et interdum lucida, costa venisque pallidis prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 10 gracilibus prominentibus angulo lato adscendentibus pallidis leviter curvis remote a margine laxae conjunctis, nervulis prominulis laxae reticulatis; flores capitati, capitulis terminalibus et axillaribus parvis paucifloris sessilibus c. 6 mm. latis, bracteis arcte adpressis incrassatis infra viridibus 4–5 mm. longis et latioribus, supra pallidis et ad margines incrassatis et puberulis, floribus arcte sessilibus; calyx ad apicem baccae persistens pallidus cyathiformis breviter dentatus, dentibus late triangularibus acutiusculis prope apices dense puberulis; bacca ellipsoidea 5–6 mm. longa glabra lucida.—Brazil: Santa Anna da Chapada, State of Matto Grosso, in forest, September 27, 1902, in fruit, *G. O. A. Malme 2401* (herb. Stockholm, type). Santa Anna da Chapada, August 3, 1902, *Malme 2191* (S).

Apparently this plant is referable to Mueller's group *Monocephalae* of the subgenus *Cephaelis*, as treated by Mueller in the *Flora Brasiliensis*, but it can not be referred to any of the species placed there, nor does it agree with any other *Cephaelis* of which I have seen material. Its outstanding characters are the small, closely sessile heads and the broad, pubescent calyx lobes.

Cephaelis Mosenii, sp. nov.—Suffrutex omnino glaber decumbens vel procumbens ad nodos inferiores radicans 30–50 cm. altus, caulibus simplicibus vel parce ramosis teretibus stramineis vel pallide olivaceis, internodiis plerumque foliis aequilongis; stipulae persistentes glabrae virides 3–4 mm. longae breviter connatae profunde bilobae, lobis triangularibus longe lineari-attenuatis interdum subrecurvis; folia mediocria brevissime petiolata opposita membranacea, petiolo 1–3 mm. longo; lamina oblongo-elliptica usque ad late oblonga 5–8 cm. longa 2.5–3.5 cm. lata acuta vel breviter abrupte acuminata, acumine triangulari acuto, basi acuta usque ad rotundata, supra in sicco pallide viridis, costa venisque vix

prominulis pallidis, subtus fere concolor, costa gracili pallida prominente, nervis lateralibus utroque latere c. 9 obliquis pallidis gracilibus prominentibus arcuatis prope marginem arcuato-conjunctis, nervulis prominulis laxe reticulatis; flores capitati sessiles, capitulis terminalibus solitariis arcte sessilibus paucifloris, bracteis exterioribus 9–13 mm. longis oblongis vel anguste ovatis in sicco pallidis striatis acutis vel interdum longiacuminatis erectis, capitulis fere duplo longioribus quam latis, bracteis interioribus paullo brevioribus quam latis, bracteis interioribus paullo brevioribus plerumque linearibus viridibus; hypanthium glabrum turbinatum 2 mm. longum; calyx profunde 5-fidus, laciniis viridibus linearibus 5–6 mm. longis attenuatis; corolla extus glabra, tubo gracili 10 mm. longo supra paullo dilatato fauce dense barbato, lobis 5 patentibus 4–5 mm. longis oblongis attenuato-acutis intus minutissime puberulis vel fere glabris; antherae lineares fere 2 mm. longae, filamentis breviter exsertis.—Brazil: Sororocaba, Prov. São Paulo, in silvis humidis, January 15, 1875, *Hjalm. Mosén 3182* (herb. Stockholm, type); December 20, 1874, in silva primaeva, *Mosén 3018* (S).

Noteworthy for the very narrow and few-flowered, terminal, sessile flower heads, subtended by unusually narrow bracts.

Cephaelis plagiantha, sp. nov.—Herbacea vel suffruticosa, caule simplici c. 30 cm. alto gracili erecto vel basi decumbente in sicco fusco glabro, internodiis 2–10 cm. longis; stipulae suberectae persistentes c. 5 mm. longae triangulares ad medium laciniatae glabrae; folia opposita petiolata membranacea in sicco fusca parva, petiolo gracili 6–15 mm. longo glabro; lamina anguste oblanceolata-oblonga 6.5–9.5 cm. longa 2–2.5 cm. lata breviter acute acuminata basin versus longe attenuata, supra glabra costa venisque non elevatis, subtus paullo pallidior primo ad nervos sparse villosula vel puberula cito glabrata, costa gracili paullo elevata, nervis lateralibus utroque latere c. 8 angulo lato adscendentibus gracillimis vix prominentibus subarcuatis, nervulis obsoletis; inflorescentiae axillares capitatae pauciflorae solitariae 3–4 mm. longe pedunculatae 5–6 mm. latae, floribus arcte sessilibus; bractee exteriores anguste ovatae 6–7 mm. longae acuminatae profunde laciniatae et plus minusve ciliatae; calyx vix 1 mm. longus, laciniis filiformi-linearibus; corolla alba c. 7 mm. longa glabrata, lobis tubo brevioribus; antherae lineares exsertae 1.5 mm. longae; fructus oblongus 9 mm. longus glaber, pyrenis 2 angustis 6 mm. longis.—Peru: Dept. Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, in forest, March–April, 1931, *G. Klug 2045* (herb. Field Mus. No. 641,376, type).

Easy of recognition because of its herbaceous habit, low stature, simple stems, and small few-flowered axillary flower heads. Apparently referable to Mueller's group *Ipecacuanhales*. The species is altogether different from anything reported heretofore from Peru.

Cephaelis guarupana, sp. nov.—Frutex parum ramosus omnino glaber, ramis crassiusculis teretibus in sicco olivaceis, internodiis brevibus; stipulae fere liberae persistentes virides, superiores 1.5–2 cm. longae fere ad medium bilobae striato-nerviae, lobis triangularibus acuminatis; folia breviter petiolata mediocria firme membranacea, petiolo 8–15 mm. longo; lamina anguste oblanceolato-oblonga 9–18 cm. longa 3–5 cm. lata breviter subabrupte acuminata basi attenuato-acuminata in sicco cinereo-viridis vel olivacea, costa ut nervis supra prominentibus, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 20 gracillimis prominentibus arcuatis angulo fere recto divergentibus, nervulis obsoletis; inflorescentia terminalis c. 8 mm. longe pedunculata capitiformis densissime multiflora 2–2.5 cm. longa et aequilata, bracteis numerosis albis, exterioribus late oblongis vel obovatis c. 1.5 cm. longis obtusis vel acutis, interioribus multo angustioribus saepe longe acuminatis, floribus arcte sessilibus; corolla alba extus glabra, tubo gracili 12 mm. longo supra vix dilatato, lobis patentibus oblongis 4–5 mm. longis.—Brazil: Guarupá, civ. Pará, silva partim secundaria non inundabili, January 16, 1916, *A. Ducke 23113* (herb. Berol., type).

Here may be referred also, at least tentatively, *Ducke 23040* from Obidos, collected in January, 1916.

Cephaelis spathicalyx (Muell. Arg.) Standl. Field Mus. Bot. 4: 335. 1929. *Psychotria spathicalyx* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 319. pl. 50, f. 2. 1881.

Brazil: "Environs de Rio de Janeiro," *Glaziou 12035* (herb. Berol., herb. Kew.). Organ Mountains, *John Miers 4114* (K).

Cephaelis leucantha (Krause), comb. nov. *Uragoga leucantha* Krause, Bot. Jahrb. 40: 345. 1908.

Cephaelis schraderoides (Krause), comb. nov. *Uragoga schraderoides* Krause, Bot. Jahrb. 40: 344. 1908.

Cephaelis tricholoba (Muell. Arg.), comb. nov. *Psychotria tricholoba* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 343. 1881.

Cephaelis tomentosa (Aubl.) Vahl.—This species is the most commonly collected of all tropical American Rubiaceae, for collectors, especially novices, seem never able to resist so showy and handsome a plant. The following collections are mentioned here only because of the data accompanying them: Colombia: Quibdó, Río Atrato, *W. A. Archer 2106*. La Concepción, Río Atrato, *Archer 2006* (both specimens in U. S. Nat. Herb.). The vernacular name is recorded as "sombbrero del diablo." It is stated that a decoction of the plant is employed locally as a remedy for asthma and as an emmenagogue and expectorant.

Cephaelis umbriana, sp. nov.—Frutex metralis omnino glaber, ramulis gracilibus rigidis teretibus vel in sicco subcompressis olivaceis, internodiis elongatis; stipulae persistentes in vaginam truncatam brevissimam connatae, vagina in lacinias subulatas 4 erectas rigidas 4–5 mm. longas desinente; folia mediocria opposita breviter petiolata in sicco luteovirentia papyracea, petiolo 3–6 mm. longo; lamina lanceolato-oblonga vel ovato-oblonga 9–11.5 cm. longa 3.5–5 cm. lata longiacuminata basi acuta vel subobtusula sublucida, costa venisque supra prominentibus, costa gracili subtus elevata, nervis lateralibus utroque latere c. 13 gracillimis prominentibus angulo lato saepe fere recto ascendentibus arcuatis juxta marginem conjunctis nervulis paucis prominulis laxe reticulatis; inflorescentiae terminales capitatae involucretae c. 2 cm. longe pedunculatae erectae, floribus sessilibus numerosis; bracteae 4 exteriores rubro-violaceae ovatae vel late ovatae inaequales 1.5–2.5 cm. longae usque ad 1.5 cm. latae conspicue palmatinerviae acutae vel acuminatae basi plus minusve cordatae distinctae, bracteis interioribus conformibus vel paullo angustioribus brevioribus; hypanthium obovoideum 1.5 mm. longum, calyce campanulato vix 1 mm. longo subintegro vel undulato; corolla alba c. 2 cm. longa, tubo supra sensim dilatato fauce 3–4 mm. lato, lobis triangulari-ovatis 4–5 mm. longis acutiusculis glabris; antherae inclusae.—Colombia: Umbría, Comisaría del Putumayo, alt. 325 meters, in forest, October–November, 1930, *G. Klug 1718* (herb. Field Mus. No. 641,394, type).

Apparently a handsome plant, not closely like any species of *Cephaelis* known from Colombia, nor very near those known from Peru. It somewhat resembles *C. setifera* Standl., which has much smaller flower heads and bracts.

Cephaelis Williamsii Standl. Field Mus. Bot. 8: 185. 1930.

Known heretofore only from the Department of Loreto, Peru, this species, according to material recently collected, extends also to Colombia. Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug 1769, 1671*. A shrub or small tree 2–4 meters high; corolla cream-colored.

Chimarrhis cymosa Jacq. var. **jamaicensis** (Urban), comb. nov. *C. cymosa* Jacq. subsp. *jamaicensis* Urban, Symb. Antill. 1: 411. 1899.

Chimarrhis cymosa Jacq. var. **microcarpa** (Urban), comb. nov. *C. cymosa* Jacq. subsp. *microcarpa* Urban, Symb. Antill. 1: 411. 1899.

Chiococca pubescens Standl. Contr. U. S. Nat. Herb. 20: 209. 1919.

Of this comparatively rare species it is worth while to report a recent collection: Mexico: Vicinity of El Milagro, Sierra de San Carlos, Tamaulipas, August, 1930, *H. H. Bartlett 11178*.

Chiococca pachyphylla Wernham, Journ. Bot. 51: 323. 1913.

This species likewise is a rare one that seldom is collected.

Mexico: Cerro de los Armadillos, Sierra de San Carlos, Tamaulipas, on limestone, July, 1930, *Bartlett 10179*. La Tamaulipeca, Sierra de San Carlos, on limestone ledges, July, 1930, *Bartlett 10609*.

Chione venosa (Sw.) Urban, Symb. Antill. 4: 594. 1911. *Jacquinia venosa* Sw. Prodr. 47. 1788.

Williams and Cheesman in the *Flora of Trinidad and Tobago* have overlooked the genus *Chione*, which is represented in Tobago by the species cited above. The following specimens are in the herbarium of Field Museum:

Tobago: The Widow, in flower, August, 1910, *Broadway 3975*; a tree; flowers white and yellow, fragrant; in fruit, September, 1910, *Broadway 4389*.

Coccocypselum Condalia Pers. Syn. Pl. 1: 132. 1805.

Paraguay: In viciniis Caaguazú, in 1905, *E. Hassler 9036* (herb. Berol.). In regione fluminis Alto Paraná, 1909-1910, *K. Fiebrig 6342* (herb. Berol.).

Coccocypselum cordatum Krause, Anex. Mem. Inst. Butantan 1, pt. 3: 13. 1922.

The species was based on *Hoehne 753* from Estação Biológico, Alto da Serra, São Paulo. A photograph and fragment of the type (ex herb. Berol.) are in the herbarium of Field Museum. The following collections appear to represent the same well-marked species: Brazil: Santa Catharina, *Pabst 876* (herb. Berol.). Without locality, *Burchell 3162* (herb. Kew.).

Coccocypselum Gardneri, sp. nov.—Caules graciles teretes glabri vel pilis longis perpaucis induti, internodiis foliis plerumque longioribus; stipulae erectae lineari-subulatae 5 mm. longae glabrae; folia herbacea petiolata opposita, petiolo gracili 4-9 mm. longo sparse setoso-hirsuto; lamina lanceolato-oblonga vel rarius ovata 3.5-5.5 cm. longa 1.5-2.3 cm. lata acuta basi obtusa, supra in sicco fusca glabra, costa venisque non elevatis, subtus fusco-purpurascens, costa venisque ut quoque ad marginem pilis longis patentibus rigidibus setuloso-hirsuta, costa gracili elevata, nervis lateralibus utroque latere c. 6 tenerrimis obliquis angulo acuto adscendentibus leviter arcuatis marginem fere attingentibus, nervulis obscuris vel obsoletis; inflorescentia terminalis capitata graciliter 1.5 cm. longe pedunculata, pedunculo parce hirsuto, capitulo densissime multiflora 1 cm. lato, bracteis numerosis linearibus hirsuto-ciliatis calycem aequantibus; calyx 4-partitus, laciniis linearibus 4-5 mm. longis erectis hirsuto-ciliatis; corolla extus sparse hirsuta, tubo crasso 4 mm. longo, lobis subaequilongis oblongis acutiusculis intus glabris.—Brazil: Prov. Minas Geraes, in 1841, *Gardner 4731* (herb. Kew., type).

The species is known from a single specimen, but this shows such definitely marked characters that it seems safe to name it. *Coccocypselum Gardneri* is related to *C. Condalia* Pers., but it differs from all forms of that species in its distinctive pubescence, consisting of sparse, stiff, long, spreading hairs.

Coccocypselum guianense (Aubl.) Schum. in Mart. Fl. Bras. 6, pt. 6: 315. 1889. *Tontanea guianensis* Aubl. Pl. Guian. 108. 1775.

Paraguay: Berges ombragées des rivières à l'est de Caaguazú, November, 1874, *Balansa 1741* (herb. Kew.); stems prostrate and rooting; flowers blue; berries blue.

Coccocypselum Lyman-Smithii Standl. Field Mus. Bot. 8: 165. 1930.

Brazil: Prov. Minas Geraes, 1816-21, *Saint-Hilaire D.537* (herb. Paris). Province of Rio de Janeiro, *Glaziou 8732* (herb. Kew.). Itatiaya, Serra da Mantiqueira, under rocks, 2,300 meters, March, 1931, *R. W. Kaempfe 437* (herb. Berlin).

Coccocypselum sessiliflorum, sp. nov.—Herba repens tenuis ad nodos radicans, caulibus gracillimis, novellis adpresso-pilosulis, internodiis valde elongatis; stipulae persistentes subulatae 2 mm. longae adpresso-pilosulae; folia parva longe petiolata opposita membranacea, petiolo gracillimo 1-2 cm. longo dense adpresso-pilosulo; lamina late rotundato-ovata vel subrotundata 1-2.3 cm. longa et aequilata apice late rotundata vel obtusa et interdum brevissime apiculata, basi truncata vel subcordata, supra in sicco fusca, sparse hispida, subtus vix pallidior, tantum ad venas adpresso-pilosula, inter nervos pallide minute lineolata, costa gracili prominente, nervis lateralibus utroque latere c. 5, inferioribus approximatis, superioribus magis remotis, angulo lato adscendentibus arcuatis; flores in axillis sessiles pauci; calyx 4-partitus, laciniis linearibus 2.5-3 mm. longis hypanthio plus quam duplo longioribus adpresso-ciliatis; corolla extus glabra 4 mm. longa, tubo crassiusculo supra paulo dilatato, lobis oblongis tubo bene brevioribus; bacca globosa 4-5 mm. diam. glabra calyce persistente coronata; semina pauca plano-convexa nigra 1 mm. diam.—Brazil: Without definite locality, *Burchell 2516* (herb. Kew., type). Near Rio de Janeiro, *Gaudichaud* (herb. Kew.). Prov. Rio de Janeiro, 1841, *Miers 2852* (herb. Kew.).

This well-marked species, represented by three collections of distinct origin, is related to *Coccocypselum herbaceum* Lam., of the Greater Antilles and Central America. The latter is a larger plant whose relatively narrower leaves are mostly acute at the base.

Corynula pilosa (Benth.) Hook. f. in Hook. Icon. 12: 22. pl. 1123. 1876. *Mitchella pilosa* Benth. Pl. Hartw. 194. 1845.

This plant, which in general appearance resembles closely *Nertera depressa*, a common species of the mountains of tropical

America, was described from the high mountains of Ecuador, and has been discovered lately in the mountains of Bolivia. It has not been recorded from Peru, but the following collection proves its occurrence there: Río Mixiollo, Libertad, *Weberbauer* 7028 (herb. Field Mus., a fragment received from herb. Berol.).

Coussarea auriculata Standl. Field Mus. Bot. 4: 330. 1929.

The type of this species, which is easily recognized by its sessile leaves with narrowly auriculate bases, was collected at the mouth of the Río Santiago in eastern Peru, and until recently no other collection of the plant except the original one has been known. The species may be reported now for another country:

Bolivia: Bellavista, Mapiri region, 800 meters, April, 1927, *Otto Buchtien* 1731 (U. S. Nat. Herb.).

Coussarea chariantha, sp. nov.—Frutex 2–2.5 m. altus, trunco 10–15 cm. diam., ramulis viridibus glabris; stipulae lineari-subulatae 6–8 mm. longae; folia breviter petiolata magna crasse papyracea, petiolo crassiusculo c. 2 cm. longo; lamina late elliptica 14–20 cm. longa 7.5–12.5 cm. lata apice subrotundata et abrupte breviter cuspidato-acuminata acumine 1.1–1.5 cm. longo, basi late rotundata vel interdum subacuta, glabra, costa supra subimpressa vel plana, subtus in sicco viridis, costa crassa elevata, nervis laterilibus utroque latere c. 12 angulo saepe fere recto divergentibus subarcuatis gracilibus elevatis juxta marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis longipedunculata laxa corymboso-paniculata multiflora 9 cm. longa et aequilata, ramis gracilibus adscendentibus sparsissime strigillosis vel fere glabris, floribus graciliter 2–4 mm. longe pedicellatis; hypanthium glabrum vel glabratum 1.5 mm. longum basi acutum obovoideum, calyce 1.5 mm. longo subtruncato remote brevissime inaequaliter dentato glabro; corolla alba aperta non visa in alabastro lineari-oblonga 6–7 mm. longa apice obtusa glabra vel sparsissime minute sericea, lobis tubo longioribus.—Colombia: El Humbo, Department of Boyaca, alt. 750 meters, in dense forest, November 11, 1932, *A. E. Lawrence* 575 (herb. Field Mus. No. 708,644, type).

Coussarea contracta (Walp.) Muell. Arg. Flora 58: 467. 1875.

Faramaea contracta Walp. Nov. Act. Nat. Cur. 19: Suppl. 1: 351. 1843. *F. Fiebrigii* Krause, Bot. Jahrb. 40: 347. 1908.

Brazil: Vallinhos, Paraná, in silva primaeva, November, 1910, *Dusén* 10783. Without locality, *Sello* 1788.—Paraguay: Grande forêt de Caaguazú, November, 1874, *Balansa* 1749 (herb. Kew.); shrub 3–4 meters high; flowers white, fragrant. Plaine de Pirayu-bi entre Paraguari et Ibitimi, dans le bois, February, 1876, *Balansa* 1749a (K); shrub 3–4 meters high; fruit white. Sierra de Amambay, *Hassler* 11391 (K, herb. Berol., Paris). In regione fluminis Alto Paraná, *Fiebrig* 6130 (K). Central Paraguay, *Hassler* 3505. Cordillera de Altos, *Fiebrig* 217a (type collection of *Faramaea Fiebrigii*).

Coussarea Hoehnei (Krause), comb. nov. *Farama Hoehnei* Krause, Anex. Mem. Inst. Butantan 1, fasc. 3: 25. pl. 5. 1922.

Coussarea hyacinthiflora, sp. nov.—Omnino glabra; ramuli crassiusculi pallide ochracei subteretes, internodiis brevibus; stipulae subpersistentes crassae pallide virides 3–4 mm. longae rotundato-ovatae obtusae; folia breviter petiolata opposita membranacea, petiolo crassiusculo 6–10 mm. longo; lamina elliptica vel late elliptica 11–12.5 cm. longa 5–7 cm. lata abrupte caudato-acuminata, acumine e basi triangulari lineari-attenuato 1–1.5 cm. longo, basi acuta, supra in sicco cinereo-viridis, costa venisque pallidis vix elevatis, subtus fere concolor, in axillis nervorum foveolata, costa gracili pallida elevata, nervis lateralibus utroque latere c. 5 gracilibus prominentibus angulo latiusculo adscendentibus obliquis arcuatis prope marginem conjunctis, nervulis prominulis pallidis laxe reticulatis; inflorescentia terminalis parva sessilis thyrsoideo-paniculata dense pauciflora 3–4 cm. lata (perfecta non visa) basi trichotoma, floribus ad apices ramorum dense subumbellatis, pedicellis crassis c. 1 mm. longis, bracteis obsoletis; hypanthium obovoideo-columnare 1–1.2 mm. longum, calyce campanulato subtruncato 2–2.5 mm. longo et fere aequilato; corolla in alabastro subcurva apicem versus paullo angustata, tubo crasso 5–6 mm. longo supra dilatato, lobis 4 anguste triangulari-oblongis versus apicem acutiusculum paullo attenuatis patentibus vel subrecurvis intus glabris; antherae ut stylus inclusae.—Brazil: Pão Brazil, Rio Branco, State of Amazonas, April, 1913, *J. G. Kuhlmann 3401* (herb. Berol., type).

A relative of *Coussarea violacea* Aubl., of the Guianas and of the Rio Negro, that species differing in its pedunculate inflorescence and smaller corollas.

Coussarea japurana, sp. nov.—Praeter flores omnino glabra, ramulis novellis subteretibus fuscis; stipulae deciduae in vaginam connatae, perfectae non visae; folia magna petiolata firme membranacea, petiolo gracili 2.5–3.5 cm. longo; lamina ovata 14–23 cm. longa 8–12.5 cm. lata longe sensim acuminata, basi truncata vel late rotundata in sicco fusco-olivacea fere concolor, costa gracili subtus elevata, nervis lateralibus utroque latere c. 10 gracilibus valde arcuatis, infimis angulo recto abeuntibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis erecta 2 cm. longe pedunculata cymoso-paniculata 4 cm. longa 5 cm. lata, ramis primariis basi nudis arcuato-adscendentibus, floribus ad apices ramorum primariorum dense cymoso-congestis sessilibus vel breviter crasse pedicellatis, odoratissimis; hypanthium anguste obovoideum glabrum 1.5 mm. longum basi acutum, calyce tubuloso-campanulato 2 mm. longo truncato; corolla alba extus sparse minute puberula, tubo gracili 15–17 mm. longo fauce paullo dilatato, lobis lineari-lanceolatis 8–9 mm. longis apicem versus angustatis obtusis.—Brazil: Jubará, Rio Japurá infer., civ. Amazonas, September 17, 1904, *A. Ducke 22987* (herb. Berol., type).

Distinctive in its very large, thin, long-acuminate leaves.

Coussarea liliiflora, sp. nov.—Arbor ut videtur dense ramosa omnino glabra, ramulis vetustioribus teretibus crassis fusco-ochraceis, novellis gracilibus pallide olivaceis, internodiis brevibus; stipulae persistentes pallidae e basi late rotundato-triangulari abrupte breviterque subulato-mucronatae 1.5–2 mm. longae erectae; folia longiuscule petiolata membranacea opposita, petiolo gracili 7–12 mm. longo; lamina ovato-oblonga vel elliptico-oblonga, rarius elliptica, 4–7 cm. longa, 2–3 cm. lata, abrupte caudato-acuminata, acumine e basi anguste triangulari lineari-attenuato obtuso, prope basin abrupte contracta et longe decurrens, supra in sicco fusco-viridis, sparse minute puncticulata, costa prominente, venis vix elevatis, subtus pallidior, costa gracili prominente, nervis lateralibus utroque latere c. 6 gracillimis prominentibus angulo lato adscendentibus irregularibus subcurvis vel fere rectis remote a margine conjunctis, nervulis prominulis laxe reticulatis; flores terminales solitarii vel ternati subsessiles vel usque ad 4 mm. longe pedicellatis, pedicellis supra clavato-incrassatis; hypanthium obovoideum 2–3 mm. longum, calyce late campanulato 2.5–3 mm. longo truncato et remote dentato, dentibus suberectis subulatis vel anguste triangularibus; corolla in alabastro anguste linearis versus apicem longe attenuata, tubo gracili 2 cm. longo 2 mm. lato supra non dilatato, lobis 4 linearibus longe anguste attenuatis c. 3.5 cm. longis 2 mm. latis intus glabris patentibus albis; antherae ut stylus inclusae.—Peru: Mouth of the Río Santiago, on the Río Marañón, in upland forest, alt. 160 meters, November 22, 1924, G. Tessmann 4621 (herb. Berol., type).

This *Coussarea* is quite unlike any other known from the upper Amazon, or elsewhere, so far as I know, being especially noteworthy for the few flowers and for the long, slender corolla with exaggerated linear lobes.

Coussarea macrantha, sp. nov.—Frutex metralis, ramulis gracilibus nigris glabris subteretibus; stipulae deciduae 4–5 mm. longae semirobundatae breviter cuspidato-apiculatae; folia opposita breviter petiolata magna crasse membranacea in sicco fusca, petiolo gracili 1.5–2 cm. longo glabro; lamina late elliptica vel oblongo-elliptica 17–24 cm. longa 8–13 cm. lata plus minusve inaequilatera abrupte anguste attenuato-acuminata basi rotundata vel acuta, glabra, supra sublucida, costa nervisque prominentibus, nervulis prominulis reticulatis, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 12 gracillimis prominentibus angulo semirecto vel latiore adscendentibus leviter arcuatis vel fere rectis, nervulis prominulis arcte reticulatis; inflorescentia terminalis crasse 2.5 cm. longe pedunculata cymoso-corymbosa basi trichotoma corollis inclusis circa 10 cm. longa et paullo latior basi trichotoma, e cymis paucis umbelliformibus paucifloris composita, ramis crassis valde adscendentibus sparse minute puberulis, bracteis obsoletis, floribus brevissime crasse pedicellatis; hypanthium obconicum 2–2.5 mm. longum dense ochraceo-sericeum; calyx campanulatus 4 mm. longus

remote brevissime denticulatus sparse sericeus et praesertim supra hispidulus; corolla alba extus densiuscule et minutissime puberula, tubo gracili 3–3.5 cm. longo supra vix dilatato fauce 3–4 mm. lato, lobis 4 lineari-lanceolatis patentibus 2–3 cm. longis 5 mm. latis attenuatis acutiusculis intus glabris vel minutissime puberulis; antherae inclusae; stylus gracillimus 3.5 cm. longus minute puberulus. —Peru: Dept. Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, in forest, March–April, 1931, *G. Klug* 2070 (herb. Field Mus. No. 641,370, type).

The relationship of this rather well-marked species is evidently with *Coussarea hirticalyx* Standl., also a native of Loreto. The latter, however, has conspicuously smaller flowers, the corolla tube being only 2 cm. long, and the lobes 5–6 mm. long.

Coussarea macrocalyx, sp. nov.—Frutex 2.5–3-metralis, trunco 2.5–7 cm. diam., ramulis crassis ochraceis glabris; stipulae (perfectae non visae) 5 mm. longae et ultra late ovatae; folia magna petiolata firme pergamentacea opposita, petiolo crassiusculo 1–2.5 cm. longo; lamina oblonga vel ovalis 12–17 cm. longa 5–10 cm. lata breviter anguste acuminata, basi late rotundata usque ad acuta, glabra in sicco griseo-viridis, costa venisque supra prominulis, subtus concolor, costa elevata, nervis lateralibus utroque latere c. 11 prominentibus gracilibus angulo fere recto divergentibus versus marginem arcuato-conjunctis, nervulis prominentibus arcte reticulatis; inflorescentia terminalis cymoso-paniculata sessilis ut videtur pauciflora laxa, floribus aggregatis sessilibus, ramis glabris; fructus globoso-ovalis c. 1.5 cm. longus et 1 cm. latus basi et apice rotundatus calyce persistente coronatus; calycis (perfecti non visi) tubus angustus 10–12 mm. longus 4–5 mm. latus.—Colombia: El Humbo, Department of Boyaca, alt. 900 meters, in forest along stream, September 19, 1932, *A. E. Lawrence* 445 (herb. Field Mus. No. 708,574, type).

The collector states that the fruits are yellow. The material is incomplete, and far from being satisfactory for diagnosis. It is evident, however, that the species represented is unlike any other known from Colombia or adjacent regions, particularly in the greatly elongated calyx tube.

Coussarea megistophylla, sp. nov.—Praeter inflorescentiam glabra; ramuli crassi straminei ut videtur tetragoni, internodiis brevibus; stipulae subpersistentes triangulari-oblongae 9 mm. longae attenuato-acutae crassae; folia maxima brevissime petiolata quaternata membranacea, petiolo crasso c. 8 mm. longo; lamina anguste oblanceolato-oblonga c. 38 cm. longa et 10–12 cm. lata abrupte vel sensim acuminata basin versus longe sensim attenuata, basi ipsa acutiuscula, supra in sicco pallide flavescenti-viridis, costa venisque vix elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 16 obliquis angulo semirecto adscendentibus gracilibus prominentibus prope marginem conjunctis, nervulis pro-

minulis laxe reticulatis; inflorescentiae axillares solitariae graciliter 7–12 cm. longe pedunculatae thyrsoidae-paniculatae laxe multiflorae 6–8 cm. longae et 3–8 cm. latae, ramis gracilibus verticillatis adscendentibus sparse minute puberulis, bracteis minutis vel obsoletis, floribus numerosis subumbellatis congestis sessilibus vel brevissime pedicellatis; hypanthium obovoideum 1–1.5 mm. longum minutissime sparseque puberulum, calyce campanulato 2.5 mm. longo sparse minute puberulo truncato et obsolete denticulato; corolla extus pruinoso-puberula in alabastro apicem versus attenuata et 4-angulata, tubo 5–6 mm. longo supra vix dilatato, lobis 4 lineari-attenuatis obtusis 8 mm. longis patentibus intus pruinoso-puberulis; antherae semiexsertae lineares obtusae 3–4 mm. longae.—Brazil: Province of Minas Geraes, 1816–21, *Auguste de Saint-Hilaire* (herb. Paris, type).

The plant is altogether different from any other species of the genus, being unique in its large, narrow, elongate, and nearly sessile leaves. It is unusual, also, in having verticillate leaves and axillary inflorescences.

Coussarea Mutisii, sp. nov.—Ramuli vetustiores ochracei rimosi glabrati, novellis gracilibus sparse patentipilosis, internodiis elongatis; stipulae persistentes c. 6 mm. longae breviter pilosae apice rotundatae; folia mediocria breviter petiolata membranacea, petiolo gracili 2 cm. longo piloso; lamina oblonga vel elliptico-oblonga 14–18 cm. longa 6.5–8 cm. lata abrupte acuminata, acumine angusto sensim attenuato 1.5–2 cm. longo, basi acuta et inaequalis, supra in sicco opaca tantum ad nervos puberula, subtus concolor praesertim ad costam nervosque breviter patentipilosa, costa gracili prominente, nervis lateralibus utroque latere c. 11 tenerrimis obliquis angulo latiusculo adscendentibus subarcuatis prope marginem junctis, venulis prominulis laxe reticulatis; inflorescentia terminalis 3 cm. longe pedunculata erecta basi trichotoma, ramis simplicibus dense fulvo-hirsutis 1–1.8 cm. longis crassis, floribus ad apicem rami dense capitato-congestis, capitulis paucis vel multifloris, bracteis patentibus triangulari-ovatis 3 mm. longis hirtellis acutiusculis, floribus arcte sessilibus; hypanthium obovoideum 2.5 mm. longum dense patentipilosum; calyx angustus 6–7 mm. longus dense patentipilosus ad medium vel profundius lobatus, laciniis suberectis anguste lanceolato-oblongis attenuato-acutis; corolla in alabastro linearis fere 3 cm. longa extus breviter pilosula apice angusto obtusa, lobis linearibus tubo plus quam duplo longioribus.—Colombia: Without locality, *José Celestino Mutis 3606* (U. S. Nat. Herb. No. 1,560,361, type).

Among the Colombian species of the genus this is distinguished by the abundant spreading pubescence of the inflorescence.

Coussarea obliqua, sp. nov.—Arbor 5-metralis, ramulis crassiusculis subteretibus glabris; stipulae crassae late rotundato-ovatae 6–7 mm. longae acutae glabrae erectae; folia opposita petiolata

subcoriacea, petiolo crasso 2.5 cm. longo obscure puberulo vel fere glabro; lamina oblonga vel elliptico-oblonga c. 20 cm. longa et 8.5–9 cm. lata abrupte cuspidato-acuminata basi acuta et obliqua in sicco fusca, supra glabra lucida, costa prominula, nervulis prominulis arcte reticulatis, subtus fere concolor ubique minute adpressopilosula, costa crassa elevata, nervis lateralibus utroque latere c. 8 validis prominentibus angulo latiusculo adscendentibus arcuatis pallidis, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis c. 7 mm. longe pedunculata cymosa c. 9 cm. lata et aequilonga e capitulis paucis longe pedunculatis dense multifloris composita, floribus sessilibus, bracteis obsoletis vel deciduis; hypanthium obovoideum minutissime puberulum vel glabratum 1.5 mm. longum; calyx late campanulatus c. 2 mm. longus breviter rotundato-lobatus vel undulatus; corolla ochroleuca glabra in alabastro angulata, tubo gracili 2.5 cm. longo 1.5 mm. crasso supra vix vel non dilatato, lobis adscendentibus oblongo-linearibus acutiusculis 10–12 mm. longis.—Peru: Dept. Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, in forest, March–April, 1931, *G. Klug* 1987 (herb. Field Mus. No. 641,386, type).

The species is noteworthy for the abundant pubescence of the lower leaf surface, consisting of very minute and appressed hairs. The dried leaves, on this account, are soft to the touch.

Coussarea penetantha, sp. nov.—Glabra; ramuli crassi compressi pallide ochracei ad nodos paullo incrassati, internodiis brevibus vel elongatis; stipulae subpersistentes 7 mm. longae late ovatae obtusae vel acutae crassae granulosa pallidae erectae connatae; folia breviter petiolata opposita crasse chartacea, petiolo crasso 6–8 mm. longo supra late sulcato; lamina obovato-elliptica vel elliptica, rare lanceolato-oblonga, 12–19 cm. longa, 5–8.5 cm. lata, abrupte cuspidato-acuminata, acumine e basi triangulari longe lineari-attenuato 1–1.5 cm. longo, saepissime supra basin paullo latissima, basi cuneato-acuta, supra in sicco cinereo-viridis, costa venisque prominentibus, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 11 gracilibus prominentibus obliquis angulo circa semirecto adscendentibus valde arcuatis juxta marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis crasse 1 cm. longe pedunculata racemiformis corollis exclusis 1–1.5 cm. longa dense pauciflora, pedicellis crassis 1–2.5 mm. longis; hypanthium turbinatum 1.5–2 mm. longum; calyx late campanulatus truncatus 2.5–3 mm. longus 4 mm. latus; cetera ignota.—Colombia: Province of Barbacoas, alt. 600 meters, 1851–57, *J. Triana 1714* (herb. Kew., type; duplicate in herb. Paris); May, 1853, *Triana 3147* (41) (P).

Vernacular name, “flor de muerto.”

Coussarea penetantha resembles closely *C. grandifolia* Rusby in leaf form, but the latter is distinguished at a glance by its large, many-flowered inflorescence.

Declieuxia hedeomoides, sp. nov.—Herba vel suffrutex perennis, caulibus simplicibus c. 20 cm. altis crassis sparsiuscule pilis brevibus mollibus pubescentibus, internodiis 1.5–3 cm. longis; folia 4–5-verticillata linearia vel anguste lanceolato-linearia 13–22 mm. longa 2–3 mm. lata longe attenuata basin sessilem versus paullo attenuata rigida subpatentia vel late adscendentia glabra vel glabrata supra viridia subtus brunnescentia triplinervia, costa subtus valde elevata versus apicem venas 1–2 emittente, marginibus plus minusve revolutis; flores dense cymosi rubri, cymis parvis paucifloris in axillis superioribus insertis foliis brevioribus, floribus sessilibus congestis; hypanthium didymum glabrum, sepalis erectis lineari-subulatis vix 0.5 mm. longis; bractee breves foliaceae lineares; corolla extus glabra in alabastro obtusa, c. 12 mm. longa, tubo gracillimo versus faucem abrupte dilatato, lobis suberectis 2.5 mm. longis ovatis obtusis.—Brazil: Corrego dos Moreiras, Matto Grosso, “arbusto do campo seco,” September, 1914, J. G. Kuhlmann (Comissão Rondon) 1536 (Herb. Inst. Biol. S. Paulo, type; fragment in herb. Field Mus.).

The available material is rather scant, but sufficient to show the principal characters of the plant. This differs from other species of *Declieuxia* in its narrow verticillate leaves and its axillary inflorescence.

Deppea (?) colombiana, sp. nov.—Ramuli crassi subteretes glabri; stipulae persistentes virides ad basin in lacinias numerosas subulatas 7–10 mm. longas puberulas vel glabratas partitae; folia magna longipetiolata membranacea opposita, petiolo gracili 4–5 cm. longo supra profunde sulcato; lamina obovata vel oblongo-obovata c. 23 cm. longa et 10.5 cm. lata apice obtusa vel subrotundata et abrupte breviter acuminata, acumine triangulari attenuato 1 cm. longo, versus basin plus minusve contracta et ad petiolum longe cuneato-attenuata, supra in sicco fusco-viridis opaca glabra costa nervisque non elevatis, subtus paullo pallidior microscopice puberula vel glabra, costa crassiuscula elevata, nervis lateralibus utroque latere c. 13 obliquis angulo semirecto adscendentibus gracillimis prominulis leviter arcuatis juxta marginem conjunctis, venulis vix prominulis laxe reticulatis; inflorescentia axillaris cymosa dense multiflora 2 cm. longe pedunculata recurva 4 cm. lata, floribus arcte sessilibus congesto-cymosis; capsula obovoidea 4–5 mm. longa minutissime puberula vel glabrata fere laevis, seminibus numerosissimis minutis ferrugineis obtusangulis minute foveolatis; sepala persistentia plus minusve foliacea oblanceolata vel lineari-oblanceolata 10–12 mm. longa acuta vel acuminata subpatentia venosa minute puberula vel glabrata.—Colombia: Andes de Antioquia, in 1852, J. Triana (herb. Paris, type).

This plant, which I name here with much reluctance, evidently is closely related to *Deppea (?) venezuelensis* Standl. (Field Mus. Bot. 8: 52. 1930). The generic position of both these plants is annoy-

ingly uncertain, but probably both belong to a distinct genus that must receive a name when flowering material of one or the other has become accessible. If the fruit were not clearly capsular, the plants might be placed near *Sabicea*, or even in the genus *Amphidasya*, but from the material examined I can not believe that it is at all fleshy. *Deppea venezuelensis* and *D. colombiana* are much alike in most respects, but in *D. venezuelensis* the stipules are entire, and not at all lacinate as in the Colombian plant here described.

Diodia cymosa Cham. Linnaea 9: 217. 1834.

The specimen cited below illustrates an unexpected extension of range, for the species has been known previously only from southern Brazil.

Colombia: Medellín, Tranvía del Oriente, Dept. Antioquia, 1,500 meters, January, 1931, *W. A. Archer 1605*; corolla white, pink-tipped at first.

Dolichodelphys chlorocrater Schum. & Krause, Verh. Bot. Ver. Brandenb. 50: 102. fig. 1908.

Heretofore the genus and species have been known from a single collection, *Ule 6774* from the Department of Loreto, Peru. This is represented in the herbarium of Field Museum by a photograph and fragment of the type, from the Berlin herbarium. The Colombian collection cited below is exactly like the type in essential characters. It was taken from a tree 6 meters high with cream-colored flowers. The leaves are as much as 33 cm. long and 12 cm. wide.

It is exceedingly doubtful that the fruit of this plant is baccate, as originally described. The aspect of the inflorescence and foliage is suggestive rather of those Rubiaceae, such as the Cinchoneae, that have capsular fruit.

Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug 1804*.

Duroia genipoides Spruce ex Hook. f. in B. & H. Gen. Pl. 2: 82. 1873, nomen; Schum. in Mart. Fl. Bras. 6, pt. 6: 364. 1889.

The species was based on *Spruce 3624*, collected on the Orinoco near Maipures, the specimens being in fruit only. A recent collection clearly represents the same species:

Venezuela: Amazonas Territory, Puerto Ayacucho, 100 meters, *Holt & Blake 809*.

This collection is in flower. The species is easily recognized by its curious calyx, 1 cm. long, which is truncate, and split to the base on one side. The corolla is densely sericeous outside, especially on the thick cylindric tube, and the triangular-oblong acuminate

spreading lobes are finely tomentulose within; the tube is almost 1 cm. long, and the lobes about 1.5 cm. in length.

Duroia Melinonii, sp. nov.—Praeter inflorescentiam omnino glabra, ramulis crassiusculis fusco-brunnescentibus teretibus, internodiis brevibus; stipulae paullo supra basin circumscissae caducae, non visae; folia mediocria petiolata firme membranacea, petiolo gracili 1.5–2 cm. longo; lamina oblanceolato-oblonga 15–18 cm. longa 4.5–6 cm. lata apice obtusa vel subrotundata et abrupte acuminata, acumine anguste triangulari longe acute attenuato 1–1.5 cm. longo, basin versus longe cuneatim attenuata, supra subopaca in sicco fusca costa nervisque vix prominentibus, subtus vix pallidior brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 12 gracillimis prominulis angulo circa semirecto adscendentibus ante marginem junctis, nervulis obscuris laxissime reticulatis, margine primo sparse adpresso-setoso-ciliato; inflorescentia mascula terminalis cymosa capituliformis dense multiflora erecta 1–2 cm. longe pedunculata, floribus arcte sessilibus; hypanthium in flore masculo fere obsoleto, calyce campanulato 4–5 mm. longo undulato extus sparse sericeo vel fere glabro intus dense sericeo; corolla extus praesertim ad tubum dense pilis nitentibus ochraceis strigoso-sericea in alabastro 12 mm. longa, tubo crasso 3 mm. lato, lobis oblique lanceolatis acuminatis tubo paullo longioribus.—French Guiana: In 1842, *Mélinon* (herb. Paris, type).

This shrub or tree evidently is an inhabitant of wet deep forest, for the branches and leaves are well covered with mosses and hepatics.

Elaeagia subspicata, sp. nov.—Ramuli subteretes rimosi ochracei, novellis dense minutissime puberulis; stipulae (perfectae non visae) ovatae 6 mm. longae et ultra deciduae acutiusculae dense sericeae; folia parva breviter petiolata subcoriacea in sicco fusca, petiolo crasso fere ad basin marginato 6–8 mm. longo glabro; lamina elliptica vel latissime elliptica 7–9.5 cm. longa 4.5–6.5 cm. lata apice obtusa et breviter obtuse triangulari-protracta, basi abrupte contracta et anguste decurrens, glabra, costa supra subimpressa, nervis non elevatis, subtus brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 5 prominentibus subcurvis angulo semirecto adscendentibus prope marginem junctis, venulis prominulis reticulatis; inflorescentia terminalis erecta 5 cm. longe pedunculata basi trichotoma, floribus sessilibus dense glomeratis, glomerulis spicatis, spicis densis vel interruptis paniculatis, paniculis circa 10 cm. longis et fere aequilatis, ramis dense puberulo-tomentosis, glomerulis pauci- vel multifloris, bracteis minutis, basilaribus interdum majoribus et foliaceis; capsula obovoideo-globosa 1.5–2 mm. longa dense minute puberula calyce persistente coronata; calyx 5-lobus, lobis late ovali-ovatis vix 0.5 mm. longis obtusis erectis; semina numerosa minuta brunnea angulata grosse foveolata.—Colombia: Without locality, *José Celestino Mutis* 12 (U. S. Nat. Herb. No. 1,560,182, type; fragment in herb. Field Mus.).

In the absence of flowers the generic position of the plant is not altogether certain, but the characters agree well enough with those of *Elaeagia*. The disposition of the inflorescence is similar to that of the Bolivian *E. grandis* Rusby, which has large leaves, a short-pilose inflorescence, and narrow calyx lobes.

Faramea blechoides, sp. nov.—Omnino glabra, ramulis gracilibus teretibus fusco-olivaceis, novellis costa decurrente stipularum angulatis, internodiis elongatis; stipulae subpersistentes 1.5 mm. longae ovato-rotundatae subconnatae 2-3 mm. longe subulato-mucronatae; folia mediocria vel minora breviter petiolata firme membranacea, petiolo gracili 3-5 mm. longo; lamina elliptico-oblonga vel lanceolato-oblonga 8-12 cm. longa 2.5-4 cm. lata longe acuminata, acumine angusto attenuato obtuso, basi acuta vel anguste acuta, supra in sicco fusco-viridis lucida, costa elevata, venis prominulis eleganter reticulatis, subtus fere concolor opaca, costa gracili elevata, nervis lateralibus utroque latere c. 10 gracillimis prominentibus angulo fere recto divergentibus remote a margine conjunctis arcuatis, venulis prominulis arcte reticulatis; inflorescentia terminalis triradiata, radii 3-5 mm. longis apice paucifloris, floribus sessilibus bracteis 2 foliaceis ovatis acuminatis basi late rotundatis vel truncatis 1-2 cm. longis viridibus involucre; hypanthium angustum 1 mm. longum, calyce campanulato hypanthio multo latiore 1.5 mm. longo truncato remote subulato-denticulato; corolla extus glabra, tubo gracillimo 18 mm. longo supra paullo dilatato, lobis lineari-lanceolatis attenuatis patentibus 7-8 mm. longis.—Brazil: Goyaz, in 1843, *H. A. Weddell 2904* (herb. Paris, type).

A relative of *Faramea involucellata* Muell. Arg., which was described from the State of Rio de Janeiro.

Faramea capillipes Muell. Arg. *Flora* 58: 474. 1875.

This strongly marked species was described from Obidos in the Amazon Valley of Brazil, and it is now known to extend into Amazonian Peru. A substantial extension of its range northward is shown by the following recent collection:

Venezuela: Amazonas Territory, Cerro Yapacana, upper Río Orinoco, alt. 100 meters, April, 1931, *E. G. Holt & E. R. Blake 745*.

Faramea cardiophylla, sp. nov.—Omnino glabra, ramulis subteretibus fusco-olivaceis crassiusculis rigidis rectis, internodiis elongatis; stipulae diutius persistentes fere liberae rotundato-ovatae 5 mm. longae acutiusculae apice in aristam erectam 5 mm. longam abeuntes; folia opposita arcte sessilia et amplexicaulia, ovalia usque ad (superiora) oblonga vel ovato-ovalia, 6.5-9 cm. longa, 3-5.5 cm. lata, abrupte cuspidato-acuminata, acumine anguste triangulari attenuato acuto 5-7 mm. longo, basi late rotundata et profunde cordata, sinu usque ad 8 mm. longo, lobis late rotundatis,

lucida, crassiuscule coriacea, in sicco flavescens, costa venisque supra prominentibus, costa crassiuscula subtus prominente, nervis lateralibus utroque latere c. 14 prominentibus gracilibus angulo lato saepe recto divergentibus leviter arcuatis marginem pallidum anguste incrassatum fere attingentibus, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis 8 mm. longe pedunculata depresso-cymosa 3.5 cm. lata dense multiflora basi 5-radiata, radiis adscendentibus bis trichotomis, ramis ultimis apice umbellatim trifloris, bracteis obsoletis, pedicellis crassiusculis 3-4 mm. longis; hypanthium turbinatum 1.2 mm. longum; calyx late campanulatus 1.3 mm. longus truncatus; corolla in alabastro crassa apice late obtusa, tubo crasso 5 mm. longo fere 2 mm. lato, lobis 4 oblongo-ovatis 3.5 mm. longis obtusis subpatentibus intus glabris; antherae semiexsertae; stylus fere 3 mm. longe exsertus.—Brazil: Province de Rio de Janeiro, 1816-21, *Auguste de Saint-Hilaire A.399* (herb. Paris, type).

The plant appears to be related to *Faramea Tamberlikiana* Muell. Arg., of which I have seen no material. That is described as having distinctly petiolate and less deeply cordate leaves and a 4-dentate calyx.

***Faramea cestroides* Standl.** Field Mus. Bot. 7: 71. 1930.

Colombia: Prov. Pamplona, in forest, 2,100 meters, *Funck & Schlim 1413* (herb. Paris). Perico, Dept. Santander, 2,700 meters, in forest, *Kalbreyer 587* (herb. Berol.); a shrub 2.5 meters high; flowers very fragrant. Prov. Pamplona, 2,100 meters, in 1848, *L. Schlim 1737* (herb. Leningrad); flowers lilac, very fragrant.

***Faramea cyanea* Muell. Arg.** Flora 58: 473. 1875.

Brazil: Serra do Mar, Porto da Cima, Paraná, 200 meters, in silva primaeva, *Jänssan 708a*. Porto da Cima, Paraná, *Dusén 10258* (herb. Stockholm), *11943* (S).—Paraguay: In regione fluminis Alto Paraná, *Fiebrig 5413* (herb. Kew.), *5843* (herb. Berol.). In viciniis Caaguazü, *Hassler 9410* (B).—Argentina: Puerto León, Misiones, 75-100 meters, *H. M. Curran 681* (U. S. Nat. Herb.).

***Faramea exemplaris*, sp. nov.**—Arbuscula omnino glabra 4-metralis, trunco 6 cm. diam., ramulis gracilibus subflexuosis obtuse tetragonis fusco-ochraceis, internodiis elongatis; stipulae deciduae e basi late ovato-triangulari cuspidato-attenuatae; folia magna tenuiter coriacea breviter petiolata opposita, petiolo crasso 3-13 mm. longo; lamina oblonga vel rarius anguste lanceolato-oblonga 20-26 cm. longa 5.5-8.5 cm. lata subabrupte longe caudato-acuminata, acumine e basi anguste triangulari longe lineari-producto, basi rotundata vel obtusa, rarius acutiuscula, valde bullata, in sicco fusco-viridis, supra sublucida, costa prominente, venis valde impressis, subtus opaca, fusco-brunnescens, costa crassiuscula valde elevata, nervis lateralibus utroque latere c. 24, aliis parallelis et fere aequaliter prominentibus interjectis, valde elevatis gracilibus,

angulo recto divergentibus, rectis, in nervum regularem submarginalem conjunctis, nervo submarginali valde elevato et costae fere aequali, margine valde revoluti, nervulis paucis prominulis laxè reticulatis; inflorescentia terminalis magna laxa multiflora cymoso-paniculata c. 11 cm. longa et aequilata c. 5 cm. longe graciliter pedunculata erecta interdum basi foliaceo-bracteata repetite trichotoma, ramis gracilibus fuscis rectis vel paullo flexuosis, bracteis plerumque minutis vel deciduis, floribus plerumque in cymulas 2-3-floras dispositis, interdum umbellatis, pedicellis gracilibus rectis 2-3 mm. longis; hypanthium obovoideo-ellipsoideum 1 mm. longum; calyx latissime campanulatus c. 1 mm. latus et 0.5-0.8 mm. longus ad medium vel paullo profundius dentatus, dentibus remotis triangularibus acutis, margine truncato separatis, inaequalibus, dentibus minutis interdum interjectis; corolla in alabastro 12-13 mm. longa anguste linearis subangulata longe attenuata, lobis linearibus attenuatis tubo fere duplo longioribus, apicibus loborum in alabastro breviter liberis, tubo gracili viridi, lobis luteis.—Peru: Mouth of the Río Santiago, upper Río Marañón, alt. 160 meters, in upland forest, November 17, 1924, *G. Tessmann 4562* (herb. Berol., type).

The free tips of the corolla lobes are unusual or perhaps unique in the genus *Faramea*, to which, however, the present plant seems to belong with scarcely any doubt. In that genus it is one of the most distinct species known, because of the form and appearance of its leaves. These are extraordinarily regular in outline, being almost perfectly oblong. They are noteworthy for their bullate surface, the numerous lateral veins, and the distinct submarginal vein. The leaves bear a certain resemblance to those of the Peruvian *F. miconioides* Standl., but the flower characters of the two species are altogether distinct.

***Faramea fragrans*, sp. nov.**—Frutex vel arbuscula 1-6-metralis omnino glabra, ramis gracilibus rigidis olivaceis in sicco plus minusve compressis et striatis, internodiis elongatis; stipulae cito deciduae basi breviter connatae 1.5-2 cm. longae et ultra sensim longissime attenuatae angustissimae; folia magna breviter petiolata subcoriacea in sicco luteoviridia, petiolo crassiusculo c. 8 mm. longo; lamina elliptico-oblonga, subovalis vel obovato-ovalis 13-20 cm. longa 6-9 cm. lata apice obtusa vel acutiuscula et abrupte caudata, acumine lineari subobtusum 12-18 mm. longo basi paullo latiore, basi acuta vel subobtusum, supra sublucida venis prominulis, subtus paullo pallidior, costa crassa elevata, nervis lateralibus utroque latere c. 15 gracilibus prominentibus angulo fere recto divergentibus leviter curvis prope marginem in nervum collectivum conspicuum conjunctis, nervulis prominentibus laxè reticulatis; inflorescentia terminalis cymoso-paniculata semiglobosa crasse 4 cm. longe pedunculata laxiuscule multiflora c. 8 cm. lata basi radiatim ramosa, radiis brevibus in sicco cyaneis gracilibus rectis rigidis, bracteis minutissimis vel deciduis, floribus umbellatis, umbellis paucifloris, pedicellis c. 1

cm. longis; hypanthium turbinato-oblongum 1.5–2 mm. longum; calyx fere ad basin partitus, lobis filiformi-subulatis adscendentibus 2.5–3 mm. longis persistentibus; corolla cyanea in alabastro acutiuscula tubo gracili tereti 8–9 mm. longo, lobis ovato-ellipticis obtusis vel acutiusculis aequilongis; apices antherarum breviter exserti.—Colombia: Intendencia del Chocó, La Concepción, 15 km. east of Quibdó, alt. 75 meters, April–May, 1931, *W. A. Archer* 1943 (U. S. Nat. Herb. No. 1,519,077, type), 2095.

“Clavo. Leaves stiff and brittle; flowers the color of indigo, with the odor of cloves.” A striking plant, with handsome, neat foliage, and undoubtedly with exceptionally showy flowers. Related to *Faramea calophylla* Standl., of Colombia, but in that the calyx segments appear to be minute, rather than greatly elongate. Although the type material of that species is in fruit and the specimens of *F. fragrans* are in flower, making direct comparison difficult, there is no doubt, I think, that the plants represent altogether distinct species.

Faramea Harmsiana, sp. nov.—Frutex ramosus 1.5 m. altus omnino glaber, ramulis gracilibus acute quadrangulatis, internodiis elongatis; stipulae vaginantes in vaginam latam altius connatae c. 1 cm. longae, lobis ovatis apice obtusis vel rotundatis et mucronatis; folia magna breviter petiolata firme papyracea, petiolo gracili 2 cm. longo; lamina oblongo-elliptica c. 26 cm. longa et 11 cm. lata apice breviter subabrupte acuminata, acumine triangulari obtuso, basi acuta vel acutiuscula, supra in sicco fusco-olivacea, costa prominula, nervis vix prominulis, subtus conspicue pallidior brunnescens, costa gracillima elevata, nervis lateralibus utroque latere c. 16 gracillimis prominentibus angulo lato fere recto divergentibus subrectis prope marginem in nervum collectivum regularem conjunctis, nervo altero obscuro ad marginem contiguo, nervulis prominulis laxissime reticulatis; inflorescentia terminalis cymoso-corymbosa 5 cm. longe pedunculata erecta basi trichotoma et foliis 2 parvis fulcrata 8 cm. longa et fere aequilata, ramis valde adscendentibus crassiusculis rectis subcompressis, floribus plerisque 1–2 mm. longe pedicellatis cymosis vel subumbellatis congestis, bracteis obsoletis; hypanthium albidum 1.5 mm. longum, calyce brevissime cupulari vix 0.5 mm. longo remote dentato, dentibus triangularibus acutis erectis; corollae tubus 7–9 mm. longus gracilis supra vix dilatatus pallide caeruleus, lobis 4 lanceolato-oblongis 4–5 mm. longis patentibus acutis intense caeruleis.—Peru: Upper Marañón, mouth of Río Santiago, in upland forest, alt. 160 meters, November 18, 1924, *G. Tessmann* 4570 (herb. Berol., type).

The nervation of the leaves is similar to that of *F. miconioides* Standl., described from the Department of Junín, Peru. The latter differs in several characters, most conspicuously in its large stipules, which are 3.5–4 cm. long.

This fine Peruvian shrub, which, like many other species of the genus, must be more than ordinarily handsome in the forest, is named for Dr. H. Harms, who has contributed largely by his systematic studies of difficult groups to the present knowledge of the Peruvian flora.

Faramea heterophylla Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 131. 1881.

Brazil: Gavea, State of Rio de Janeiro, February, 1898, *Ule 4595* (herb. Berol.); a shrub growing on rocks at an elevation of 800 meters.

Faramea Killipii Standl. Field Mus. Bot. 7: 73. 1930.

Besides the material already reported under this species, another collection has been examined recently: Colombia: La Baja, Prov. Pamplona, 2,850 meters, February, 1848, *L. Schlim 1690* (herb. Leningrad). The collector describes the corolla as violet.

Faramea lutescens, sp. nov.—Omnino glabra, ramulis crassis in sicco lutescentibus teretibus, novellis interdum subcompressis, internodiis elongatis foliis brevioribus; stipulae persistentes 7–12 mm. longae ad medium connatae et laxae vaginantes rotundato-ovatae apice obtusae vel rotundatae et 2–3 mm. longe subulato-mucronatae; folia mediocria vel majuscula brevissime petiolata crasse papyracea vel subcoriacea, petiolo crasso 4–10 mm. longo; lamina oblonga vel anguste elliptico-oblonga 8.5–24 cm. longa 3–7 cm. lata acuta vel obtusa et abrupte caudato-acuminata, acumine angusto longe attenuato interdum lineari usque ad 2 cm. longo, basi acuta, margine saepe anguste revoluta, supra in sicco pallide luteo-viridis, costa elevata, nervis prominulis, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 12 gracillimis prominulis angulo fere recto divergentibus prope marginem conjunctis, venulis prominulis laxissime reticulatis; inflorescentia terminalis cymoso-corymbosa sessilis et basi foliaceo-bracteata vel usque ad 4 cm. longe pedunculata, subdense multiflora 6–10 cm. lata, basi tri- vel pauciradiata, ramis albidis vel lutescentibus crassiusculis, floribus cymosis vel subumbellatis, pedicellis rectis usque ad 14 mm. longis, bracteis parvis late ovatis; hypanthium pallidum 1.5 mm. longum, calyce aequilongo pallido truncato et remote breviter subulato-denticulato usque ad 4.5 mm. lato hypanthio multo latiore; corolla in alabastro longissime attenuata plus minusve angulata 16–20 mm. longa, tubo brevi 2.5 mm. lato, lobis lineari-lanceolatis longissime attenuatis tubo duplo vel ultra longioribus.—Colombia: Provincias de Chocó y Barbacoas, Ríos San Juan y Patio, alt. 80 meters, March, 1853, *J. Triana 3154* (herb. Field Mus. No. 650,509, type, duplicate in herb. Paris). Provincias de Chocó y Barbacoas, alt. 80 meters, *Triana 1731* (P), *1732* (P).

The specimens attract attention because of the pale yellowish green coloring of the leaves. The flower buds are conspicuous

because of the fact that they are unusually long-attenuate to the apex.

Faramea macrura, sp. nov.—Omnino glabra, ramulis gracilibus subteretibus fusco-brunneis, internodiis valde elongatis; stipulae deciduae, non visae; folia mediocria breviter petiolata subcoriacea, petiolo gracili 5–10 mm. longo; lamina lineari-oblonga vel lineari-lanceolata 10–16 cm. longa 1.5–3 cm. lata longissime lineari-attenuata, acumine 1.5–2.5 cm. longo, basin versus longiuscule sensim attenuata, lucida, supra in sicco fusca, costa elevata, nervis venisque prominulis, subtus paullo pallidior brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 18 prominulis angulo fere recto divergentibus ante marginem in nervum collectivum conjunctis, ceteris subparallelis minus prominentibus interjectis, venulis prominulis arcte reticulatis; inflorescentia terminalis longe pedunculata basi umbellatim pauciradiata, radiis gracilibus apice compressis cymis paucifloris laxis terminatis, floribus graciliter pedicellatis, pedicellis usque ad 8 mm. longis rectis; bracteae ad basin inflorescentiae insertae foliaceae coloratae ovatae vel ellipticae usque ad 5 cm. longae et 2.5 cm. latae apice longissime caudatae, acumine 1–1.5 cm. longo; hypanthium subglobosum 1 mm. longum, calyce truncato aequilongo; discus obtuse conicus calyce duplo longior.—Colombia: Provincia del Chocó, Noapama, March, 1853, *J. Triana 3154* (3) (herb. Paris, type).

Referable to the subgenus *Eufaramea*, which is distinguished by the large colored bracts of the inflorescence. *Faramea macrura* is similar to the Peruvian *F. anisocalyx* Poepp. & Endl., differing from that in the narrow leaves, slender pedicels. and long slender tips of the bracts.

Faramea Malmei, sp. nov.—Frutex arborescens 2–3-metralis, omnino glaber, ramis erecto-patentibus, cortice tenui laevigata, ramulis gracilibus subteretibus olivaceis laevibus rectis, internodiis 4.5–8 cm. longis; stipulae cito deciduae vel caducae liberae erectae e basi late ovato-triangulari in aristam elongatam angustatae; folia brevissima petiolata opposita mediocria tenuiter coriacea in sicco flavescentia, petiolo crasso 2–3 mm. tantum longo; lamina oblonga 9–11 cm. longa 3–4 cm. lata abrupte caudato-acuminata, acumine e basi triangulari lineari-attenuato c. 1 cm. longo, basi late obtusa, rotundata vel leviter cordata, supra opaca vel sublucida, costa pallida elevata, venis vix prominulis, subtus paullo pallidior, opaca, costa gracili elevata, nervis lateralibus utroque latere c. 14 gracillimis vix prominulis angulo recto divergentibus fere rectis paullo ante marginem conjunctis, nervulis vix prominulis arcte reticulatis, lamina latiuscule pallido-marginata; inflorescentia terminalis sessilis cymoso-paniculata c. 8 cm. longa et 9 cm. lata laxa multiflora basi trichotoma, ramis 2–3-trichotomis late adscendentibus rectis, floribus in cymulas laxis trifloras dispositis, bracteis persistentibus minutis lanceolato-subulatis, pedicellis rigidis sed gracilibus plerumque 2–3

mm. longis, flore terminali cymulae brevius pedicellato vel sessili; hypanthium late obovoideum 1 mm. longum, calyce 0.7 mm. longo 4-dentato, dentibus ovato-triangularibus acutis vel acuminatis; corolla glabra in alabastro crassiuscula acuta, tubo 5 mm. longo et 1.5 mm. lato supra vix dilatato, lobis 4 oblongis acutiusculis 3-4 mm. longis subpatentibus intus glabris; antherae lineares semiexsertae lobos corollae aequantes; stylus inclusus; fructus transverse ovalis 8 mm. latus.—Brazil: Cuyabá, Matto Grosso, in margine silvulae loco arenoso, January 3, 1894, *G. A. Malme 1300* (herb. Stockholm, type). Santa Anna da Chapada, Matto Grosso, in capoeiras et in silvis, September, 1902, *Malme 2360* (S); June, 1903, *Malme 2360a* (S).

Related to *Faramea coarinnensis* Muell. Arg., a species whose type was collected by Martius on the upper Amazon. In that the leaves have more numerous pairs of nerves and are "narrowly lance-elliptic" in outline.

Faramea montevidensis (C. & S.) DC. Prodr. 4: 497. 1830. *Tetramerium montevidense* C. & S. Linnaea 4: 29. 1829.

Brazil: Porto Alegre, Rio Grande do Sul, in silvula "capão" umbrosa, November, 1901, *Malme 498* (herb. Stockholm); a shrub 2 meters high or less; corolla white.

Faramea phaneroura, sp. nov.—Arbor parva omnino glabra ramulis gracilibus, novellis in sicco compressis et plus minusve quadrangulatis, internodiis elongatis; stipulae brevissime connatae 2-2.5 mm. longae late rotundatae et 1.5-2 mm. longe mucronatae; folia mediocria petiolata subcoriacea, petiolo usque ad 1 cm. longo; lamina oblonga vel oblanceolata-oblonga 7.5-11 cm. longa 2.5-3.5 cm. lata apice subrotundata et abrupte in caudam linearem 1-1.5 cm. longam desinens, basi acuta vel attenuata, fusco-olivacea, subtus fere concolor, costa utrinque prominente, pallida, nervis lateralibus utroque latere c. 13 pallidis rectis in marginem desinentibus angulo lato abeuntibus, nervulis obsoletis; inflorescentia terminalis 2.5 cm. longe pedunculata laxe multiflora corollis neglectis c. 1.5 cm. longa et 3 cm. lata, ramis interdum subelongatis et plus minusve secundifloris, floribus sessilibus vel usque ad 3 mm. longe pedicellatis, pedicellis crassiusculis; hypanthium obovovideo-globosum 1 mm. longum, calyce truncato 1 mm. longo; corolla alba in alabastro 15-17 mm. longa tubo fere lineari supra vix dilatato, lobis linearibus tubo paullo brevioribus.—Brazil: Gurupá, civ. Pará, silva non inundabili, December 27, 1916, *A. Ducke 23055* (herb. Berol., type).

Description of new species is not to be commended in the genus *Faramea* in which there are already so many described species, many of them based on slight and apparently variable characters. Although the plant here described has no outstanding characters, it has not been possible to refer it to any of the species known from Amazonia, or from any other region of Brazil.

Faramea singularis, sp. nov.—Frutex usque ad 4 m. altus omnino glaber, ramulis gracilibus subteretibus pallide olivaceis internodiis valde elongatis; stipulae persistentes annulares obscure bilobae 1.5 mm. longae, lobis abrupte in aristam gracilem 5 mm. longam abeuntibus; folia breviter petiolata mediocria firme membranacea, petiolo gracili 5–7 mm. longo; lamina oblonga vel oblanceolato-oblonga 7.5–12 cm. longa 2–4 cm. lata subabrupte caudato-acuminata, acumine c. 1 cm. longo angusto apice obtusissimo, basi acuta vel acuminata, supra in sicco laete viridis, costa venisque ut quoque venulis prominentibus, utrinque glabra, subtus paullo pallidior, costa gracili pallida prominente, nervis lateralibus utroque latere c. 11 pallidis gracilibus prominentibus angulo lato saepe fere recto divergentibus fere rectis vel leviter curvis remote a margine laxe conjunctis, nervulis prominulis laxe reticulatis; flores terminales pauci umbellati bracteolati, pedicellis crassis 2–3 mm. longis; bracteolae basi hypanthii insertae in sicco pallide viridescentes lanceolatae vel anguste lanceolatae usque ad 3 cm. longae interdum flores aequantes longe attenuatae tenues; hypanthium breve, calyce pallido late campanulato 2 mm. longo inaequaliter remote 4-dentato, dentibus angustis erectis; corolla glabra, tubo crassiusculo 2 cm. longo prope medium 2–3 mm. lato fauce paullo contracto recto, lobis 4 patentibus anguste lanceolato-oblongis 10–12 mm. longis attenuato-acuminatis intus glabris.—Brazil: Santa Anna da Chapada, State of Matto Grosso, in silvis praesertim in subhumidis, October 7, 1902, G. O. A. *Malme* 2457 (herb. Stockholm, type).

The plant belongs to the subgenus *Eufaramea* as defined by Mueller in the *Flora Brasiliensis*. From all the known species of the group it differs in its simply umbellate, almost capitate flowers.

Faramea spathacea Muell. Arg. in herb., sp. nov.—Frutex ramosus omnino glaber, ramulis gracilibus teretibus vel stipulis decurrentibus angulatis in sicco olivaceis, internodiis elongatis sed foliis brevioribus; stipulae breviter connatae laxae 2–2.5 mm. longae rotundatae apice 1 mm. longe subulato-mucronatae persistentes; folia mediocria petiolata crasse membranacea vel subcoriacea, petiolo gracili 4–8 mm. longo; lamina anguste elliptico-oblonga vel interdum oblanceolato-oblonga 5–12 cm. longa 1.5–4 cm. lata abrupte longiacuminata, acumine angusto attenuato obtuso, basi acuta vel obtusa, supra in sicco fusco-olivacea sublucida, costa ut venis prominente, subtus fere concolor, anguste pallide marginata, costa gracili elevata, nervis lateralibus utroque latere c. 13 gracillimis prominulis angulo fere recto divergentibus leviter arcuatis prope marginem conjunctis, venulis prominulis arcte reticulatis; flores axillares solitarii vel in cymulas trifloras aggregati graciliter 1–2.5 cm. longe pedicellati, pedicellis vel pedunculis interdum recurvis; calyx tubulosus truncatus 4.5–7 mm. longus 2.5–3 mm. latus; corolla alba, tubo gracillimo 14–25 mm. longo 1.5 mm. lato, lobis lineari-attenuatis 10–16 mm. longis patentibus.—Venezuela: Guardia de San Agustín prope Caripe, *Moritz* 468 (herb. Berol., type; repre-

sented in herb. Field Mus. by a photograph and fragment).—Colombia: Without locality, in 1843, *Funck* (herb. Paris). Pericos, Prov. Ocaña, 1,200 meters, May, 1846–52, *Schlim* 531 (P).

Among the *Faramea* species of northwestern South America this is unique in its chiefly solitary and axillary flowers with elongate tubular calyx.

***Faramea tetragona* Muell. Arg. Flora 58: 472. 1875.**

The species was based upon a specimen collected by Sello in Brazil, the exact locality being unknown. A photograph of the type, from the Berlin herbarium, is in the herbarium of Field Museum. The following collections are conspecific: Brazil: Santos, in 1875, *Mosén* 3788 (herb. Stockholm, herb. Paris), 3787 (herb. Paris). Alto da Serra, São Paulo, in silva, 700 meters, May, 1916, *Dusén* 18099 (S).

The first collection cited agrees exactly with the type. The second appears at first glance decidedly different because of its much broader leaves, but in floral structure it agrees with No. 3788, and I am inclined to believe that both numbers represent forms of a remarkably variable species.

***Faramea Weddellii*, sp. nov.**—Frutex ut videtur parvus ramosus omnino glaber, ramis in sicco pallide viridibus teretibus, novellis costa decurrente stipularum angulatis, internodiis elongatis sed foliis brevioribus; stipulae persistentes brevissime connatae late rotundatae 3 mm. longae apice in aristam erectam aequilongam desinentes; folia mediocria brevissime petiolata subcoriacea in sicco luteo-viridia, petiolo vix 3 mm. longo; lamina elliptico-oblonga vel ovato-elliptica 5–11 cm. longa 2–5.5 cm. lata cartilagineo-marginata acuta vel breviter acutissime acuminata, basi late rotundata, sub-lucida, costa supra ut nervis valde elevata, costa subtus elevata, nervis lateralibus utroque latere c. 10 angulo lato adscendentibus gracillimis prominentibus ante marginem arcuato-conjunctis, nervulis prominulis arctissime reticulatis; flores 3–4 terminales 1 mm. longe pedicellati foliis fere occulti; hypanthium 1 mm. longum, calyce aequilongo truncato campanulato dentibus 4 setiformibus remotis erectis pallidis onusto; corolla glabra, tubo gracillimo 12 mm. longo supra vix dilatato, lobis 4 linearibus patentibus attenuatis 9–10 mm. longis.—Brazil: Entre Goyaz et Cuyabá, November–December, 1844, *H. A. Weddell* 2889 (herb. Paris, type).

Noteworthy for the few terminal subumbellate flowers, and for the much thickened and indurate leaf margins.

***Galium equisetoides* (Cham. & Schlecht.), comb. nov.** *Rubia equisetoides* Cham. & Schlecht. Linnaea 3: 332. 1828.

Gonzalagunia bunchosioides Standl. Field Mus. Bot. 8: 162. 1930.

An addition to the recorded flora of Colombia is this species, described recently from the Department of Loreto, Peru. Colombia: Umbría, Comisaría del Putumayo, 325 meters, in clearing, *Klug* 1727. A shrub with white corollas.

Gonzalagunia pachystachya, sp. nov.—Arbor 6-metralis, trunco 6 cm. diam., ramulis crassis subteretibus brunnescentibus dense pilis longis rigidis patentibus hirsutis, internodiis elongatis; stipulae persistentes suberectae ferrugineae firme membranaceae anguste triangulares attenuatae 16–19 mm. longae dorso ad costam breviter hirsutae; folia magna breviter petiolata firme membranacea, petiolo gracili 7–10 mm. longo; lamina ovata vel oblongo-ovata 13–18 cm. longa 6.5–8 cm. lata longe anguste attenuato-acuminata basi plus minusve obliqua obtusa, supra in sicco fusca sparsissime breviter hirsuta, subtus pallida ubique ad nervos densius longipilosa, costa gracili elevata, nervis lateralibus utroque latere c. 10 arcuato-adscendentibus gracilibus prominentibus; inflorescentia spiciformis densissime multiflora breviter pedunculata 15–22 cm. longa basi 3 cm. lata supra angustata, rhachi densissime breviter ferrugineo-hirsuta, floribus in cymas paucifloras aggregatis sessilibus vel breviter pedicellatis, bracteis parvis linearibus floribus multo brevioribus hispidulis; hypanthium globosum densissime hispidulum, sepalis 4 late ovatis obtusis intus glabris 1–1.5 mm. longis; corolla alba extus pilis rigidis valde adscendentibus hispida, tubo gracili supra paullo dilatato 7 mm. longo, lobis 4 oblongis obtusis vel subacutis intus puberulis aequilongis.—Peru: Mouth of Río Santiago. Marañón Valley, in upland forest, alt. 160 meters, October 15, 1924, *G. Tessmann* 4295 (herb. Berol., type; fragment in herb. Field Mus.).

Among the few species of *Gonzalagunia* known from Peru, the present plant is noteworthy for its large and very dense, not interrupted inflorescences, as well as for its large leaves, with distinctive pubescence.

Hamelia boyacana, sp. nov.—Ramuli graciles brunnescentes, novelli sparse minutissime puberuli; folia opposita mediocria petiolata membranacea, petiolo gracili 7–13 mm. longo; stipulae filiformi-subulatae c. 3 mm. longae erectae; lamina oblonga vel oblanceolato-oblonga 8–12 cm. longa 3–4 cm. lata subabrupte longiacuminata basi acuta vel attenuata, supra sparse papillosa, subtus glabra vel tantum ad costam elevatam puberula, nervis subtus prominulis gracillimis; inflorescentia terminalis sessilis vel pedunculata laxa pauciflora, ramis brevibus dense minute puberulis, paucifloris, floribus vix secundis, pedicellis 2–9 mm. longis; hypanthium late oblongum 4 mm. longum minute puberulum; calycis lobi distincti lineari-lineares 3 mm. longi ciliolati erecti; corolla lutea extus minute puberula, tubo 4 mm. longo, fauce sursum sensim dilatato 25 mm.

longo supra 9 mm. lato, lobis suberectis rotundato-ovatis obtusis 4 mm. longis.—Colombia: El Humbo, Department of Boyaca, alt. 750 meters, edge of forest, October 5, 1932, A. E. Lawrance 503 (herb. N. Y. Bot. Gard., type; fragment in herb. Field Mus.).

Vernacular name, "tinto." According to the collector, "very attractive, and rare here." The large broad yellow corolla and the narrow elongate calyx lobes are the outstanding characters of the plant, which has no very close relatives in South America, although some exist in Central America.

The collector states that this plant is a tree 50–70 feet high, with a trunk one to two feet in diameter, dimensions that I consider most improbable for a member of the genus *Hamelia*.

Hamelia panamensis Standl. Contr. U. S. Nat. Herb. 20: 208. 1919.

The species has been collected at various localities in Panama, and it may be reported now from adjacent South America: Colombia: Intendencia del Chocó, between La Oveja and Quibdó, April, 1931, W. A. Archer 1736 (U. S. Nat. Herb.). Vernacular name, "huesito." Flowers with the color of cream cheese.

Heterophyllaea Fiebrigii (Krause), comb. nov. *Hindsia Fiebrigii* Krause, Bot. Jahrb. Engler 40: 320. 1908.

More careful inspection of a photograph and fragment of the type of *Hindsia Fiebrigii*, from Toldos, Bolivia, shows clearly that the plant is really a species of *Heterophyllaea*, since it has the characteristic crenate and glandular-pustulate leaves of that genus. As a matter of fact, it may be only a variety of *H. lanceolata* Hook. f., but that and *H. pustulata* Hook. f. are glabrous plants, while *H. Fiebrigii* has conspicuous and rather copious pubescence.

Hillia Weberbaueri, sp. nov.—Omnino glabra, ramulis crassiusculis subteretibus fusco-brunneis lenticellis magnis elevatis sparse conspersis, internodiis elongatis; stipulae deciduae crassiusculae oblongae 18 mm. longae 6 mm. latae obtusae; folia mediocria breviter petiolata subcoriacea opposita, petiolo crassiusculo 5–8 mm. longo; lamina anguste oblanceolato-oblonga 8.5–13.5 cm. longa 2.5–3.5 cm. lata abrupte longiuscule acuminata, acumine angusto acuto, basin versus longe attenuata, supra in sicco fusco-brunnescens, costa vix prominula, nervis lateralibus utroque latere c. 8 obscuris angulo acutissimo adscendentibus, subtus paullo pallidior, costa crassiuscula brunnescente prominula, venis obsoletis; flores terminales solitarii sessiles; hypanthium oblongum 8 mm. longum, calyce nullo vel caduco; corolla hexamera glabra, tubo gracillimo c. 7 cm. longo 2.2 mm. lato fauce non vel vix dilatato, lobis oblongis obtusis 1.5 cm. longis patentibus; antherae inclusae;

cetera ignota.—Peru: Without locality, 1909–14, A. Weberbauer 6955 (herb. Field Mus. No. 629,243, type).

Similar to *Hillia odorata* Krause, likewise Peruvian, but the latter is distinguished at a glance by its much broader leaves.

Hoffmannia Duckei, sp. nov.—Suffrutex erectus metralis plus minusve ramosus, caulibus teretibus fusco-ferrugineis gracilibus dense minute patenti-pilosulis, internodiis valde elongatis interdum foliis longioribus; stipulae persistentes erectae 7–8 mm. longae e basi late ovato-triangulari longe attenuato-acuminatae dense pilosulae; folia opposita vel ternata breviter petiolata membranacea, petiolo gracili pilosulo 7–15 mm. longo; lamina lanceolato-oblonga vel anguste lanceolato-oblonga 14–27 cm. longa 4–10 cm. lata subabrupte et longissime attenuato-acuminata, acumine angusto longe attenuato saepe subfalcato, basin versus longe attenuata, supra in sicco fusca vel brunnescens ubique sparse minute pilosula, costa venisque prominulis, subtus paullo pallidior, pilis paullo longioribus patentibus densius pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis gracillimis prominulis angulo latiusculo adscendentibus arcuatis juxta marginem conjunctis, nervulis prominulis sed vix conspicuis laxe reticulatis; flores in axillis dense fasciculati sessiles numerosi; hypanthium cum calyce late campanulatum 2 mm. longum sparse minute pilosulum vel fere glabrum, calyce truncato vel obscure remote denticulato; corolla alba extus minute hispidulo-pilosula, tubo gracillimo 12 mm. longo supra paullo sensim dilatato fauce 1.8 mm. lato, lobis 4 oblongis, 3–3.5 mm. longis acutis, apicibus loborum in alabastro brevissime liberis.—Brazil: Faro, State of Pará, Castanhal da Boa Vista, silva non inundata, January 31, 1910, A. Ducke 18899 (herb. Berol., type). Bella Vista ad cataractum infimum fluminis Tapajoz, State of Pará, in silva non inundata, February 5, 1917, Ducke 18900 (herb. Berol.).

Only two other species of *Hoffmannia* are known from Brazil, both quite different from the present plant. *Hoffmannia Duckei* is an unusually well-marked species for this difficult genus, notable for its very long-acuminate leaves and its dense clusters of sessile, slender flowers.

Hoffmannia Williamsii, sp. nov.—Frutex, ramis gracilibus subteretibus, novellis dense ferrugineo-villosis, internodiis 2.5–5.5 cm. longis; folia opposita longiuscule petiolata herbacea, petiolo gracili 1–2.5 cm. longo ferrugineo-villoso; lamina oblanceolata vel oblanceolato-oblonga 8–12.5 cm. longa 2.5–3.3 cm. lata longe anguste acuminata, acumine obtusiusculo saepe subfalcato, basin versus longe sensim attenuata et longe decurrens, supra viridis glabra, subtus paullo pallidior et rufescens, praesertim ad venas aliter sparsius villosa, costa gracili elevata, nervis lateralibus utroque latere c. 8 gracillimis arcuatis prope marginem conjunctis; flores in axillis dense cymoso-fasciculati, cymis pauci- vel multifloris sessili-

bus vel brevissime pedunculatis, floribus sessilibus vel vix 1 mm. longe pedicellatis; hypanthium primo villosulum, calycis lobis late triangularibus obtusiusculis brevissimis vix 0.5 mm. longis; bacca ellipsoidea glabrata 4–5 mm. longa basi obtusa apice calyce persistente coronata.—Peru: San Roque, Dept. San Martín, edge of trail, alt. 1,400 meters, January 13, 1930, *Llewelyn Williams 7369* (herb. Field Mus. No. 614,554, type).

In general appearance the plant resembles closely *H. aggregata* (R. & P.) Schum., likewise Peruvian, but in that the leaves are wholly glabrous.

Houstonia longifolia and **H. canadensis**.—In most recent works treating the botany of the northeastern United States these two names, the latter including the synonymous *H. ciliolata*, have been considered to represent distinct species. They were so treated in the *North American Flora* (vol. 32, 1918) by the writer, who had assumed that the forms represented by the names were distinct enough to be recognized without great difficulty. However, a short time ago Mr. C. C. Deam submitted for study his complete series of Indiana specimens of the two species, with a request for some practical means of distinguishing them.

Careful study of this material reveals that both forms are represented in Indiana, but that both are scattered over the state and do not have distinctive ranges. It is apparent, also, that even extreme forms are not especially unlike, and that at best *H. canadensis* Willd. is a poorly marked species. All the several characters suggested to separate the two forms break down when the Indiana material is examined, nor does material from other states appear to be more easily separable. Certainly, if the specimens came from the tropics, no one except the most determined "splitter" would consider distinguishing them. It therefore seems best to reduce *H. canadensis* and its synonym *H. ciliolata* Torr. outright to synonymy under *H. longifolia* Gaertn., or else to recognize as a rather poorly marked variety *H. longifolia* var. *ciliolata* (Torr.) Wood.

Isertia Krausei, sp. nov.—Ramuli crassi glabri; stipulae c. 1 cm. longae profunde bifidae glabrae, lobis obtusis; folia opposita breviuscule petiolata crasse coriacea, petiolo crasso 3–4 cm. longo glabro; lamina anguste oblonga vel oblanceolato-oblonga c. 32 cm. longa et 9.5 cm. lata subabrupte longiacuminata, acumine angusto attenuato acuto, basin versus longe sensim attenuata, supra fusca glabra lucida, venis arcte reticulatis impressis, subtus pallidior, ad venulas non tomentosas sparse breviter pilosula, in areolis minute albo-tomentulosa, costa crassa elevata, nervis lateralibus utroque latere c. 25 elevatis gracilibus rectis angulo fere recto divergentibus,

nervulis arcte reticulatis valde prominentibus; panícula thyrsioidea sessilis vel pedunculata et basi foliaceo-bracteata 22 cm. longa et 7 cm. lata densiuscule multiflora inferne interrupta, ramis brevibus crassis adscendentibus vel subpatentibus angulatis glabris, floribus sessilibus vel breviter crasse pedicellatis, bracteis parvis late ovatis obtusis; hypanthium obovatum glabrum 7 mm. longum; calyx 4-dentatus, dentibus late triangularibus obtusis c. 2 mm. longis; corolla extus glabra crasse tubulosa 3.5 cm. longa, tubo cylindraceo 5-6 mm. lato, lobis ovalibus obtusis 6-7 mm. longis, fauce dense barbata.—Peru: Dept. Libertad, A. Weberbauer 7066 (herb. Field Mus. No. 7066, type).

The species was indicated in the herbarium as new by Dr. Krause, but the name which he gave to the plant already has been published by the writer for another species. *Isertia Krausei* is a well-marked species, distinguished particularly by its stiff, narrow leaves, with minute and scant tomentum, which is confined to the bottom of the areoles on the lower leaf surface.

Isertia Pittieri Standl. Field Mus. Bot. 8: 346. 1931. *Cassupa Pittieri* Standl. Contr. U. S. Nat. Herb. 17: 445. 1914.

There has been received lately a collection of this rare species that extends somewhat its previously known range: Colombia: Quibdó, Río Atrato, Intendencia del Chocó, 60 meters, in 1931, W. A. Archer 1776 (U. S. Nat. Herb.). The collector's notes report that the vernacular name is "jaboncillo," and that the plant is a tree 6-9 meters high. The long white corollas soon fall from the calyx but are held hanging by the stout curved style. The flowers have a strong musky odor, which, however, does not prevent their being used to form funeral wreaths. The leaves are employed as a substitute for soap, hence the vernacular name.

Ixora peruviana (Spruce) Standl. Field Mus. Bot. 7: 296. 1931. *Cephalanthus breviflorus* Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 129. 1889, non *Ixora breviflora* Hiern. *C. peruvianus* Spruce ex Schum. loc. cit.

It is rather strange that both Spruce and Schumann, both of them discriminating botanists, should have so mistaken the tribal position of this Peruvian plant. However, they were unacquainted with the fruit, which would have indicated clearly that the plant could not be referred to the genus *Cephalanthus*. Recent collections bear mature fruit, which proves that the plant is really a member of the genus *Ixora*. As a matter of fact, it is closely related to the well-known *I. floribunda* (Rich.) Griseb., of the West Indies and Colombia. Both *C. breviflorus* and *C. peruvianus* were described from Tarapoto, and they were distinguished chiefly on the size of

the corolla. It seems probable that the material represents only a single species.

The following specimens of *Ixora peruviana* are in the herbarium of Field Museum:

Peru: Tarapoto, *Ule* 6374 (photo. and fragm. of specimen in herb. Berol.); *Spruce* 4175 (photo. of type collection in herb. Berol.); December, 1929, *Williams* 6717, 6716, 6595.—Bolivia: Yapacani, 4,000 meters, June, 1892, *Kuntze*. Río Surutú, Dept. Santa Cruz, *Steinbach* 3483. San Buena Ventura, *R. S. Williams* 627.

***Ixora Duckei*, sp. nov.**—Frutex metralis dense ramosus, ramis crassis ochraceis, novellis plus minusve compressis puberulis, internodiis abbreviatis; folia mediocria sessilia vel vix 2 mm. longe petiolata oblongo-ovata vel elliptico-oblonga subcoriacea 4.5–8 cm. longa 2–4 cm. lata acuta vel acutiuscula basi latissime rotundata subtruncata vel breviter cordata glabra lucida, costa supra prominente nervis obsoletis, subtus concoloria costa prominente, nervis lateralibus remotis paucis prominulis, nervulis obsoletis; inflorescentiae cymoso-paniculatae laxae multiflorae vix foliis longiores, ramis gracilibus puberulis, bracteis parvis, floribus sessilibus vel breviter crasse pedicellatis; hypanthium puberulum, calyce late campanulato, dentibus late ovatis puberulis obtusis vel acutis vix 1 mm. longis; corolla rubida extus dense puberula in alabastro acuto, tubo gracillimo 13–14 mm. longo, lobis 4 rotundato-ellipticis 3–4 mm. longis.—Brazil: Campinas do Achipicá, Rio Trombetas infer., civ. Pará, September 20, 1910, *A. Ducke* 23051 (herb. Berol., type).

The available material of this plant is not in altogether satisfactory condition, and appears to have been taken from a somewhat weather-beaten shrub of poor development. In its essentially sessile leaves with more or less cordate bases, the proposed species appears to be fully distinct from any other Brazilian *Ixora* with pubescent corollas.

***Ixora escalerae* Standl.** Field Mus. Bot. 8: 173. 1930.

The species was based upon a single collection from the Department of Loreto, Peru, *Ule* 6778. The following collection agrees well with the type: Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug* 1795; a shrub 2 meters high; corolla cream-colored.

***Ixora Gaillardii*, sp. nov.**—Arbuscula 3–4-metralis praeter inflorescentiam omnino glabra, ramulis crassiusculis teretibus interdum minutissime papillois, internodiis elongatis; stipulae induratae persistentes breviter connatae 5–6 mm. longae late rotundatae apice mucronatae; folia sessilia mediocria coriacea anguste lanceolato-oblonga 10–16.5 cm. longa 2.5–5.5 cm. lata apicem ver-

sus sensim anguste attenuata basi rotundata et breviter cordata, supra in sicco fusco-olivacea costa prominente venis obscuris vel obsoletis, subtus paullo pallidiora, costa gracili elevata, nervis lateralibus utroque latere 10–12 gracillimis prominulis angulo latiusculo adscendentibus leviter arcuatis prope marginem junctis, nervulis obscuris laxe reticulatis; inflorescentia terminalis sessilis cymoso-umbellata laxiuscule multiflora c. 3.5 cm. longa et 5.5 cm. lata multiradiata, ramis primariis rectis suberectis sparse minute puberulis vel glabratis 1–1.5 cm. longis, cymis paucifloris densis, floribus arcte sessilibus, bracteis angustis usque ad 6 mm. longis, bracteolis minutis ovatis; hypanthium subglobosum 1–1.5 mm. longum minutissime puberulum, calycis lobis 0.8 mm. longis ovalibus late obtusis; corolla rosea extus minutissime puberula in alabastro obtusa, tubo gracili 5–7 mm. longo supra vix dilatato, lobis 4 patentibus 3–4 mm. longis ovalibus apice rotundatis; antherae semiexsertae. —Venezuela: Puerto Zamuero, Río Orinoco, in forest, June 12, 1887, A. Gaillard 26 (herb. Paris, type).

The species is a well-marked one for this genus, noteworthy particularly for its long narrow sessile coriaceous leaves with rounded and more or less cordate bases.

Joosia Dielsiana, sp. nov.—Arbor 6-metralis, trunco 12 cm. diam., ramulis gracilibus subteretibus fusco-brunnescentibus sparse adpresso-pilosis vel glabratis, internodiis elongatis; stipulae anguste oblongae c. 1 cm. longae deciduae obtusae glabratae, marginibus recurvis; folia mediocria petiolata crasse membranacea, petiolo gracili 1–2 cm. longo sparse adpresso-piloso vel fere glabro; lamina elliptico-oblonga vel anguste elliptica 8.5–18 cm. longa 3–7.5 cm. lata acute acuminata basi acuta supra in sicco fusca sublucida glabra, costa nervisque prominentibus, subtus pallidior brunnescens primo pilis laxis adpresso-pilosa cito glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 10 angulo semirecto vel paullo latiore adscendentibus gracillimis prominentibus arcuatis marginem fere attingentibus; inflorescentia terminalis dichotoma vel trichotoma longipedunculata, pedunculo 6–8 cm. longo erecto, ramis simplicibus adscendentibus vel subrecurvis 1.5–2.5 cm. longis sublaxe paucifloris, floribus arcte sessilibus; hypanthium cylindraceum 2.5 mm. longum dense pilis fulvis adpresso-tomentosum; calyx campanulatus 3 mm. longus et fere aequilatus dense adpresso-pilosulus brevissime dentatus, dentibus latis inaequalibus obtusis vel rotundatis; corolla extus dense adpresso-pilosa, tubo gracili viridi-luteo 11–12 mm. longo supra vix dilatato, lobis 5 patentibus aequilongis ad medium bilobis, lobis late oblongis undulato-crispatis intus glabris; capsula glabrata oblonga subteres 1.5–2.5 cm. longa septicide bivalvis, valvis breviter bilobis.—Peru: Upper Marañón, mouth of Río Santiago, in upland forest, alt. 160 meters, November 5, 1924, G. Tessmann 4478 (herb. Berol., type).

Of the genus *Joosia* there have been described only two species, both of which are known or reported to occur in Peru. In both

J. dichotoma (R. & P.) Karst. and *J. umbellifera* Karst. the capsules are greatly elongate, 3.5–6.5 cm. long or larger, and the valves after dehiscence are spirally twisted. In the present species there is no indication of contortion of the valves. The fruit of *J. Dielsiana* is so unlike that of the species previously named that it might almost be considered worthy of generic rank. However, the corolla, altogether unlike that of any other group of Rubiaceae, clearly indicates the generic position of this Peruvian tree.

Joosia Dielsiana is named for Dr. L. Diels, Director of the Botanical Museum of Berlin, to whom the writer is indebted for many courtesies, and particularly for the loan of many hundreds of tropical American Rubiaceae whose study has proved to be a fascinating task.

Ladenbergia Ulei, sp. nov.—Frutex vel arbor 2-8-metralis, ramulis crassis subteretibus glabris; stipulae subpersistentes late ovatae acutae vel acuminatae fere 2 cm. longae crassae glabrae; folia magna petiolata subcoriacea, petiolo crasso 2.5–3.5 cm. longo glabro; lamina obovata vel oblanceolato-oblonga 18–25 cm. longa 7.5–12 cm. lata acuminata basi acuta, supra in sicco fusca glabra vel primo praesertim ad costam sparse adpresse setuloso-pilosula, costa nervisque vix elevatis, subtus pallidior brunnescens primo minutissime puberula sed cito glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo latiusculo adscendentibus leviter curvis prominentibus breviter ante marginem junctis, nervulis inconspicuis vix prominulis reticulatis; inflorescentia terminalis anguste decussato-paniculata breviter pedunculata c. 17 cm. longa et 8 cm. lata, rhachi crassa glabrata, ramis primariis brevibus subteretibus sparse ramosis, ramulis plerumque trifloris, floribus sessilibus vel brevissime crasse pedicellatis, bracteis 4–5 mm. longis persistentibus latissime ovatis obtusis vel acutis alte connatis dense adpresso-pilosulis; hypanthium 5–7 mm. longum clavato-cylindraceum densissime adpresso-pilosum, calyce 5 mm. longo late campanulato dense adpresso-pilosulo truncato et remote minute dentato, dentibus acutis; corolla alba extus densissime fulvo-sericea, tubo crasso 3 cm. longo vel paullo ultra supra paullo dilatato et fauce 5–6 mm. lato, lobis oblongis acutiusculis 2–2.5 cm. longis intus dense minutissime puberulis.—Peru: Pampas de Ponasa, Dept. Loreto, March, 1903, *E. Ule* 6765 (herb. Berol., type).

A relative of *Ladenbergia crassifolia* (Pavón) Standl., likewise a Peruvian species.

Limnosipanea parviflora, sp. nov.—Herba tenella annua erecta 12–20 cm. alta simplicicaulis supra dichotome pauciramosa, caulibus gracillimis teretibus strigosis, internodiis valde elongatis; folia parva membranacea breviter petiolata opposita vel media ternata, lamina ovata vel oblongo-ovata 3–6 mm. longa 2.5–4 mm.

lata acuta basi obtusa vel rotundata et in petiolum 1–2 mm. longum abrupte contracta trinervia sparse strigosa; flores ad apices ramulorum fere filiformium aggregati pauci arcte sessiles; hypanthium dense setoso-pilosum, calycis laciniis viridibus 1.5 mm. longis linearilanceolatis acuminatis erectis sparse strigosis; corolla infundibularis 5 mm. longa extus glabra, tubo gracili supra paullo dilatato, lobis brevibus obtusis vix 1 mm. longis.—Brazil: Prov. Minas Geraes, 1816–21, *Auguste de Saint-Hilaire B2141* (herb. Paris, type).

Distinct primarily in the minute flowers.

Limnosipanea Schomburgkii Hook. f. in Hook. Icon. *pl.* 1040. 1868; Schum. in Mart. Fl. Bras. 6, pt. 6: 254. 1889.

A considerable extension range is indicated by the following collections in the Stockholm herbarium: Brazil, State of Matto Grosso: Cuyabá, in arenosis apertis humidis in consortio *Porter-anthera*, *Acisanthera*, etc., June, 1902, *G. O. A. Malme 1654*. Prope Morrinho de Santo Antonio, loco aperto humido parce graminoso, April, 1894, *Malme 1578*. The species may also be reported for the first time from Colombia: Llano de San Martín, Quebradita Tiramene, *Triana 3248* (2) (herb. Paris).

Limnosipanea Spruceana Hook. f. in Benth. & Hook. Gen. Pl. 2: 53. 1873; Schum. in Mart. Fl. Bras. 6, pt. 6: 253. *pl.* 123, f. 1. 1889.

Of this apparently rare species Schumann lists only the original collection, *Spruce 677* from Santarem, Brazil, represented in the herbarium of Field Museum by a photograph; and *Pohl 3326* from Pirapora. The following collections therefore represent a substantial extension of range: Brazil, State of Matto Grosso: Aricá, prope Cuyabá, loco arenoso humido sat graminoso, June, 1894, *G. A. Malme 1662*; in ora subnuda paludis, May, 1903, *G. O. A. Malme 2260* (both in herb. Stockholm).

Loretoa, gen. nov.—Arbores altae glabrae; stipulae magnae intrapetiolares integrae persistentes; folia opposita magna petiolata coriacea integra plus minusve reticulata; flores actinomorphi majusculi pentameri sessiles vel breviter pedicellati in paniculam decussatam e cymis paucifloris compositam conflati; calyx cupularis breviter et inaequaliter 5–6-dentatus intus dense sericeus; corolla clavato-infundibularis breviter quinqueloba, lobis subrecurvis late rotundatis integris glabris aestivatione sinistrorsum contortis, tubo lato supra paullo dilatato prope insertionem staminum piloso; stamina 5 supra basin tubi inserta, filamentis gracilibus elongatis glabris, antheris linearibus inclusis basifixis; discus depresso-annularis; hypanthium obovoideum biloculare, ovulis numerosis placentae dissipimento tota longitudine adnatae peltatim affixis sursum imbricatis; stylus gracilis elongatus inclusus, stigmatibus bifido, lamellis 2 lanceolato-ovatis acutis.

Loretoa peruviana, sp. nov.—Arbor glabra 20-metralis, ramulis crassis subteretibus vel obtuse quadrangularibus; stipulae fere 3.5 cm. longae crassae fuscae obtusissimae vel acutiusculae; petioli crassi 2–2.5 cm. longi basi dilatati; lamina late elliptica vel subrotundata 15–18 cm. longa 12 cm. lata apice rotundata basi obtusissima vel rotundata coriacea in sicco fusco-brunnescens, costa venisque supra prominentibus, venulis vix prominulis, subtus concolor, costa crassiuscula elevata, nervis lateralibus utroque latere c. 8 gracilibus prominentibus angulo acutissimo adscendentibus leviter arcuatis prope marginem conjunctis, nervulis prominentibus arcte reticulatis; inflorescentia magna terminalis sessilis e basi trichotoma c. 25 cm. longa et aequilata vel latior, ramis crassis rigidis rectis angulo lato adscendentibus interdum subdivaricatis ultimis plus minusve compressis; bractae persistentes oblongo-ovatae acutae vel acuminatae patentes c. 1 cm. longae, pedicellis bracteolatis, bracteolis bracteis conformibus sed multo minoribus; flos centralis sessilis vel rarius pedicellatus, lateralibus pedicellatis, pedicellis usque ad 1 cm. longis; calyx persistens c. 3 mm. altus et 7–10 mm. latus, intus dense sericeus, breviter inaequaliter dentatus, dentibus latissime triangularibus acutis vel obtusis; corolla subcoriacea fere 4 cm. longa extus glabra, tubo fere 3 cm. longo basi infima 6 mm. lato prope medium 12 mm. lato, lobis late ovato-rotundatis 8 mm. longis; stamina 6 mm. supra basin tubi inserta, filamentis 1 cm. longis glabris, antheris linearibus 8 mm. longis; stylus 12 mm. longus et ultra, lamellis 2 mm. longis; hypanthium obovoideum basi acutum vel attenuatum 4–5 mm. longum.—Peru: Dept. Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, in forest, March–April, 1931, *G. Klug 2022* (herb. Field Mus. No. 641,369, type).

Vernacular name, “meta guais.” Corolla “rose-garnet.” The collector states that the fruit is edible, which would imply that it was fleshy and juicy. I am of the opinion, however, after study of the ovaries, that the fruit must be capsular. Certainly the ovules appear to be imbricate and apparently winged, and winged seeds, of course, would not be found in a baccate fruit.

The writer takes no particular pride in describing this tree as a new genus, especially because fruit, which would establish its position more definitely, is not available. If, as is believed, the fruit at maturity is a capsule, the plant must belong to the tribe *Cinchoneae*. There it does not have any very close relatives unless it be *Ferdinandusa*, which the Peruvian tree does resemble greatly in general appearance, as well as in some of the structural details. *Loretoa*, however, is altogether distinct from *Ferdinandusa* in its equal stamens with included and basifixed anthers.

Macrocnemum latilimbum Standl. Field Mus. Bot. 8: 154. 1930.

Colombia: Prov. Soto, 900 meters, February, 1846-52, *L. Schlim* 1073 (herb. Paris). A shrub with pink flowers.

Manettia sublanata Wernham, Gen. *Manettia* 21. 1919. *M. ignita* (Vell.) Schum. var. *incana* Schum. in Mart. Fl. Bras. 6, pt. 6: 171. 1889.

With his description Wernham cites only the type, *Hassler* 8841, from Cordillera de Villa Rica, Paraguay, a sheet of which I have seen in the Delessert Herbarium. The following collections in the same herbarium evidently are conspecific:

Paraguay: In regione Cerros de Tobaty, September, 1900, *Hassler* 6246. Villa Rica, sur le bord des ruisseaux, February 1876, *Balansa* 2135 (type collection of var. *incana*); flowers rose-colored.

Manettia Wernhamiana, sp. nov.—Herba (?) volubilis fere omnino glabra, caulibus crassis teretibus ferrugineis glabris, internodiis elongatis; stipulae persistentes in vaginam incrassatam 4-5 mm. longam connatae, vagina utroque latere lobo lineari-subulato erecto 5-6 mm. longo onusta; folia breviter petiolata opposita subcoriacea, petiolo crasso 3-7 mm. longo; lamina elliptica vel oblongo-elliptica 4.5-10 cm. longa 2.5-5 cm. lata abrupte cuspidato-acuminata, acumine fere 1 cm. longo obtuso, basi acutiuscula vel subobtusata et abrupte contracta, anguste stramineo-marginata, glabra, supra in sicco olivacea sublucida, costa venisque non elevatis, subtus paullo pallidior, costa gracillima elevata, nervis lateralibus utroque latere 6-7 gracilibus prominulis angulo angustissimo adscendentibus, nervulis obsoletis; flores cymoso-capitati, capitulis dense multifloris 2.5 cm. diam., pedunculis simplicibus axillaribus crassis glabris 1.5-2.5 cm. longis, floribus sessilibus vel subsessilibus; hypanthium obovoideum 2.5 mm. longum glabrum; calyx viridis in sinibus inter lobos parce breviter setuloso-ciliatus, aliter glaber, fere ad basin 4-fidus, lobis 4-7 mm. longis inaequalibus oblongis vel spathulato-oblongis obtusis submarginatis patentibus; corolla (perfecta non visa) parva in alabastro c. 4 mm. longa ad medium 4-fida extus glabra in fauce dense albido-barbata.—Brazil: Bahia, in 1832, *Blanchet* 809 (herb. Delessert, type).

The plant must be related to *Manettia capitata* Wernham and *M. Miersiana* Wernham, neither of which I have seen. Those are the only species of the genus which are described as having capitate inflorescence. Both are described as being smaller in all their parts, and *M. capitata*, according to Wernham, is "delicatula," a term that certainly does not apply to *M. Wernhamiana*, which is one of the most robust plants of the whole genus.

Mitracarpus eritrichoides, sp. nov.—Herba pusilla ut videtur perennis et prostrata ramosa, ramis gracilibus 2-4 cm. longis dense pilis rigidis albis hispidis, internodiis foliis longioribus vel saepe

brevioribus; folia brevissime petiolata oblonga vel oblongo-elliptica 4–6 mm. longa acuta basi acuta vel subobtusata utrinque densissime pilis longis patentibus albis hispida; flores dense capitati, capitulis globosis dense multifloris 4–7 mm. diam. terminalibus vel 1–2 quoque in axillis supremis insertis; hypanthium subglobosum albidostrigosum, sepalis 4 erectis lanceolato-linearibus attenuatis 1.5–2 mm. longis strigillosis ad costam viridibus albidomarginatis; capsula bilocularis supra medium circumscissa 1.2 mm. lata.—Brazil: Sources du Paraguay (envir. de Diamantino), Prov. de Mattogrosso, December, 1844, *H. A. Weddell 3090* (herb. Paris, type).

The plant is clearly referable to *Mitracarpus*, but in habit and especially in quality of pubescence it is altogether unlike any other South American representative of the genus.

Morinda panamensis Seem. Bot. Voy. Herald 136. 1854.

A Central American species, extending to Colombia, but not recorded previously from Mexico.

Mexico: In shady places, Santa Domitila, Tabasco, April, 1890, *J. N. Rovirosa 779* (herb. Kew.); vernacular name, "palo de peine."

Oldenlandia filicaulis Schum. in Mart. Fl. Bras. 6, pt. 6: 271. pl. 127, f. 2. 1899.

Brazil: State of Bahia, near Remanso, December, 1906, *E. Ule 7419* (herb. Delessert).

Oldenlandia tenuis Schum. in Mart. Fl. Bras. 6, pt. 6: 273. 1889.

Brazil: Surumu, Rio Branco, Serra do Mel, September, 1909, *E. Ule 8327* (herb. Delessert); flowers white.

Palicourea aeneofusca (Muell. Arg.), comb. nov. *Psychotria aeneofusca* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 253. 1881.

Palicourea rigida HBK. Nov. Gen. & Sp. 3: 370. 1820.

In the enumeration of the *Rubiaceae of Colombia* (Field Mus. Bot. 7: 149. 1930), only one collection of this species, from Santa Marta, was reported, but another has been noted more recently: Colombia: Ocaña, *J. Engel* (herb. Leningrad).

Palicourea apthosa, sp. nov.—Frutex 2-metralis, ramulis vetustioribus teretibus crassis ochraceis, novellis fuscis vel fusco-ferrugineis densissime et minutissime ochraceo-pilosulis, internodiis brevibus; stipulae 3–4 mm. longae persistentes alte connatae ad medium bilobae, lobis late triangularibus obtusis fuscescentibus glabratis; folia breviter petiolata opposita coriacea, petiolo crasso 4–8 mm. longo glabro; lamina lanceolato-oblonga prope medium latissima 5.5–8.5 cm. longa 1.5–2.8 cm. lata breviter acuminata, acumine obtusiusculo, basi acuta, anguste marginata, supra in sicco fusco-brunnescentis, primo prope costam sparse minute puberula sed cito glabrata, costa venisque non elevatis, sublucida, subtus palli-

dior, brunnescens, glabra, costa gracili elevata, nervis lateralibus utroque latere c. 17 gracilibus prominentibus arcuatis angulo lato adscendentibus juxta marginem conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis sessilis vel pedunculata, saepe prope basin foliaceo-bracteata, thyrsoido-paniculata, dense multiflora, 4–7 cm. longa, 3–4 cm. lata, basi trichotoma, supra plerumque oppositiramosa, ramis crassis rigidis adscendentibus saepe angulatis densissime minute ochraceo-puberulis, bracteis plerumque basi ramorum insertis ovato-triangularibus vel subulatis rigidis glabris usque ad 3 mm. longis acutis vel acuminatis patentibus, floribus arcte sessilibus in cymulas dense multifloras dispositis; hypanthium late cylindraceum vix 1 mm. longum glabratum, calyce lato subaequilongo remote acuteque 5-denticulato, denticulis acutis glabris vel glabris; corolla lutea in alabastro 5–6 mm. longa clavata glabra vel glabrata, basi loborum 5-verrucosa, tubo crasso basi valde incrassato supra dilatato, lobis 5 ovali-ovatis obtusis tubo paullo brevioribus.—Peru: Mountains southwest of Monzón, Prov. Huamalis, Dept. Huánuco, alt. 2,500–2,900 meters, July 13, 1903, A. Weberbauer 3401 (herb. Berol., type).

“Flowers citron-yellow.” A fairly well-marked species, noteworthy for the very dense and minute, pale, dirty pubescence of the branches, and for the wart-like projections at the base of the corolla lobes.

Palicourea aragmatophylla Schum. & Krause, Bot. Jahrb. 40: 332. 1908.

Ecuador: Villonaco, November, 1881, Poortmann 77 (herb. Paris); a shrub 3–5 meters high; flowers greenish blue.

Palicourea barraensis (Muell. Arg.), comb. nov. *Psychotria barraensis* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 254. 1881.

Palicourea charianthema Standl. Field Mus. Bot. 8: 226. 1930.

Two additional collections of this species may now be reported: Peru: Iquitos, Dept. Loreto, 120 meters, a shrub in forest, October 11, 1929, Williams 3678. Paraíso, Alto Río Itaya, Dept. Loreto, 145 meters, October 1, 1929, a common shrub, Williams 3302.

Palicourea stenostachys Krause, Bot. Jahrb. 40: 340. 1908.

Only the type collection of this Peruvian species has been known heretofore, but three recent collections may now be reported. The species is represented in the herbarium of Field Museum by the following material: Peru: Open thickets near Moyobamba, Dept. Loreto, 900 meters, Weberbauer 4474 (photo. and fragm. of type from herb. Berol.). Tarapoto, Dept. San Martín, 750 meters, a shrub, Williams 5980. Lamas, near Tarapoto, 840 meters, a small

shrub, *Williams 6388*. San Roque, Dept. San Martín, a shrub in open dry loam, 1,350–1,500 meters, *Williams 7276*.

Palicourea chrysotricha (Zahlbr.), comb. nov. *Psychotria chrysotricha* Zahlbr. Ann. Naturh. Hofmus. Wien 7: 1. 1892.

Palicourea cymosa (R. & P.), comb. nov. *Psychotria cymosa* R. & P. Fl. 2: 59. pl. 206, f. b. 1799.

Palicourea paraensis (Muell. Arg.), comb. nov. *Psychotria paraensis* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 245. 1881.

Palicourea decipiens (Muell. Arg.), comb. nov. *Psychotria decipiens* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 241. 1881.

Palicourea grandifolia (Willd.), comb. nov. *Psychotria grandifolia* Willd. apud Roem. & Schult. Syst. 5: 190. 1819.

Palicourea polyodonta (Muell. Arg.), comb. nov. *Psychotria polyodonta* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 236. 1881.

Palicourea cornifolia Standl. Field Mus. Bot. 7: 318. 1931.
Bolivia: Incachaca, Prov. Chapare, Dept. Cochabamba, 2,200 meters, in forest, January, 1929, *Steinbach 8908* (herb. Stockholm).

Palicourea fastigiata HBK.—A species common in many parts of South America, but apparently unknown previously in Central America. Apparently it has not been seen by recent collectors in the Canal Zone region, although found there many years ago. Panama: Lion Hill Station, in swamps, May, 1862, *Sutton Hayes 667* (herb. Paris). A shrub of 2.5–3.5 meters; flowers reddish yellow.

Palicourea Herzogii, sp. nov.—Frutex ut videtur dense ramosus ramulis subteretibus laevibus glabris fusco-brunneis, internodiis brevibus; stipulae persistentes in vaginam incrassatam 1 mm. longam subtruncatam connatae, vagina in lobos 4 erectos rigidos anguste triangulares obtusiusculos 1.5–2 mm. longos connatae; folia parva breviter petiolata coriacea, petiolo crassiusculo glabro 4–6 mm. longo; lamina saepe complicata oblongo-ovata vel elliptico-oblonga 4.5–7.5 cm. longa 2–2.8 cm. lata versus apicem acutum paullo angustata, basi acuta, supra in sicco luteovirens, costa prominente, venis prominulis, glabra, subtus paullo pallidior, glabra, costa crassiuscula elevata, nervis lateralibus utroque latere c. 11 gracilibus prominentibus angulo latiusculo adscendentibus arcuatis marginem fere attingentibus, nervulis prominulis arctissime reticulatis; inflorescentia terminalis parva 2.5–3.5 cm. longe pedunculata erecta dense cymoso-corymbosa multiflora 2–3 cm. lata et aequilonga compacta, ramis brevibus crassis glabris vel sparse minute hirtellis, floribus sessilibus vel breviter crasse pedicellatis, bracteis minutis; hypanthium glabrum turbinatum vix 1 mm. longum, calyce parvo obtuse dentato c. 0.6 mm. longo; corolla aurea 9–10 mm. longa tubulosa basi paullo dilatata, tubo crasso cylindraceo supra fere 2

mm. lato extus ubique densissime pilis longiusculis crassiusculis patentibus villosus et quasi tuberculatus, lobis brevibus erectis ovali-ovatis c. 1 mm. longis.—Bolivia: Tres Cruces, Cordillera de Santa Cruz, alt. 1,500 meters, February, 1911, *Th. Herzog 1563* (herb. Stockholm, type).

The collection has been reported by Dr. Herzog as *Palicourea rigida* HBK., "forma parvifolia," the determination made by Wernham. However, the plant represented is not at all closely related to that well-known species. It is well distinct from any of the several other species recorded from Bolivia, nor have I been able to refer it to any described from neighboring regions, although it has no particularly pronounced characters. The corolla characters are the most distinctive.

Palicourea hispidula, sp. nov.—Ramuli graciles teretes glabri fusco-ferruginei, internodiis brevibus plerumque circa 1 cm. longis; stipulae persistentes in vaginam 1–1.5 mm. longam hispidulam connatae, vagina in lobos 4 lineari-subulatos 4–5 mm. longos hispidulos vel glabratos erectos approximatos desinente; folia parva breviter petiolata opposita coriacea, petiolo crasso 2–5 mm. longo sparse hispidulo vel glabrato; lamina lanceolato-oblonga prope medium latissima 4.5–9 cm. longa 1.5–2.3 cm. lata longiuscule sensim acuminata basi acuta, acumine angusto attenuato-acuto, supra in sicco fusco-olivacea glabra opaca, costa venisque non elevatis, subtus pallidior, sparse praesertim ad venas hispidula vel serius glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 10, aliis paullo minus conspicuis interdum interjectis, prominulis gracilibus angulo lato saepe fere recto adscendentibus arcuatis marginem fere attingentibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis cymoso-corymbosa graciliter 1 cm. longe pedunculata laxa pauciflora foliis subaequalis basi trichotoma, ramis gracillimis fuscis ut pedunculis glabris, floribus in cymulas trifloras dispositis vel interdum subumbellatis, bracteis minutis lanceolatis hispidulis saepe supra axillas insertis, pedicellis gracilibus rectis plerumque 5–8 mm. longis; hypanthium late obovoideum cum pedicello articulatum 1 mm. longum glabrum vel glabratum, calyce late campanulato 1.5 mm. longo sparse minute hispidulo breviter denticulato, denticulis distantibus triangularibus erectis acutis; corolla extus glabra vel in alabastro sparse minute hispidula, tubo gracili 9–10 mm. longo basi paullo incrassato subcurvo supra paullo dilatato prope medium 1.5 mm. lato, lobis ovato-triangularibus 2.5 mm. longis suberectis acutiusculis intus dense pulverulaceo-puberulis; antherae oblongo-lineares semiexsertae.—Brazil: "Environs de Rio de Janeiro et d'Ouro Preto," 1883–84, *A. Glaziov 14900* (herb. Kew., type).

It is difficult to determine the closest relatives of the present plant, but it may be recognized best by the sparse, coarse, harsh pubescence, most of which disappears in age.

Palicourea Klugii, sp. nov.—Arbor 5-metralis ut videtur omnino glabra, ramulis crassiusculis fuscis subteretibus; stipulae erectae subadpressae 6–8 mm. longae ad medium bilobae, lobis late semi-ovatis obtusissimis; folia breviter petiolata maxima crasse coriacea in sicco fusca, petiolo crasso 2 cm. longo; lamina lanceolato-oblonga 24–35 cm. longa 8–12 cm. lata breviter acute acuminata, basi acuta et obliqua supra opaca vel sublucida, costa venisque prominulis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 14 gracilibus prominentibus angulo fere recto divaricatis, nervulis obscuris vel obsoletis; inflorescentia terminalis 2.5 cm. longe pedunculata erecta globoso-thyrsoidea dense multiflora c. 6 cm. longa et aequilata, ramis patentibus basi nudis obtuse angulatis brevibus, bracteis obsoletis, pedicellis gracilibus plerumque 1–1.5 cm. longis; hypanthium cylindraceo-obovoideum 1.5 mm. longum; calyx fere obsoletus annuliformis obscure denticulatus; discus elevatus calyce bene longior; corolla lilacina lineari-tubulosa extus glabra, tubo gracili usque ad 14 mm. longo supra interdum paullo dilatato et fauce 2.5–3 mm. lato, lobis oblongo-linearibus 3–4 mm. longis adscendentibus obtusis; antherae lineares breviter exsertae 4–5 mm. longae.—Peru: Dept. Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, in forest, March–April, 1931, *G. Klug* 1977 (herb. Field Mus. No. 641,384, type).

The plant has no especially distinctive characters within the genus, but it is noteworthy for its unusually large leaves, small, condensed, thyrsoform inflorescence, and complete lack of pubescence.

The collector gives the vernacular name as “parinari,” and states that the fruit is edible. I suspect that the name is erroneous, since it is given usually to certain trees of the family Rosaceae.

Palicourea lachnantha, sp. nov.—Arbuscula 4-metralis, ramulis teretibus fuscis glabris vel glabratibus; stipulae 8–10 mm. longae puberulae fere ad basin bifidae, laciniis lineari-lanceolatis attenuatis erectis; folia opposita breviter petiolata firme membranacea in sicco fusca, petiolo gracili c. 1.5 cm. longo puberulo; lamina lanceolato-oblonga 22–25 cm. longa 7–8 cm. lata longiuscule acuminata basin versus attenuata et plus minusve decurrens, supra sublucida ad nervos puberula aliter glabra costa venisque prominulis, subtus fere concolor praesertim ad nervos breviter patentibus pilosa, aliter glabra vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 15 gracillimis prominentibus arcuatis, nervulis prominulis inconspicuis laxe reticulatis; inflorescentia terminalis parva cymosa 2 cm. longe pedunculata, dense multiflora, c. 5 cm. longa et 7 cm. lata, ramis brevibus dense pilosis divaricatis vel adscendentibus basi non bracteatis, bracteis lanceolatis fuscis longe attenuatis usque ad 14 mm. longis ciliatis, floribus sessilibus vel breviter pedicellatis confertis; hypanthium villosum, calyce profunde lobato, laciniis lineari-lanceolatis attenuatis villosis usque ad 3 mm. longis;

corolla tubulosa c. 2.5 cm. longa extus densiuscule pilis longissimis plerumque 3–4 mm. longis patentibus villosa, tubo crassiusculo supra paullo dilatato fauce 4 mm. lato, lobis angustis 3–4 mm. longis.—Peru: Dept. Loreto, Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, March–April, 1931, *G. Klug 1973* (herb. Field Mus., type).

“Corolla red-violet.” The species may be recognized immediately by the large corolla and the extraordinarily long pubescence with which it is covered.

***Palicourea laniflora*, sp. nov.**—Praeter inflorescentiam omnino glabra, ramulis crassis subteretibus in sicco nigris; stipulae breves profunde bilobae, lobis 2.5–3 mm. longis apice rotundatis plus minusve induratis erectis; folia magna petiolata crasse membranacea, petiolo crassiusculo 3–4 cm. longo; lamina elliptico-oblonga 16–29 cm. longa 5.5–8.5 cm. lata acuta vel breviter acuminata, acumine angusto acute attenuato, basi acuta, in sicco fusco-olivacea, minutissime sparse papillosa, supra vix lucida, costa nervisque prominulis, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 13 gracillimis prominentibus angulo fere recto divergentibus in marginem desinentibus, venulis prominulis laxae reticulatis; inflorescentia terminalis erecta 10 cm. longe pedunculata thyrsoido-paniculata c. 8 cm. longa et fere aequilata dense multiflora, ramis compressis vel angulatis sparse minute puberulis, ramis basi bracteatis, floribus cymosis dense congestis, pedicellis crassis suberectis usque ad 3 mm. longis puberulis, bracteis minutis late ovatis acuminatis puberulis; hypanthium late cylindraceum 1–1.5 mm. longum dense puberulum, calyce cupulari truncato hypanthio latiore vix 0.8 mm. alto; corolla extus dense pilis longis mollibus villosa fere 3 cm. longa, tubo crasso basi 4–5 mm. lato ad faucem 5–6 mm. lato, lobis late ovatis obtusis 3–4 mm. longis erectis.—Brazil: Rio Negro, “*Herb. Lusit.*” (herb. Paris, type).

This *Palicourea* of the Amazonian region is a relative of *P. lanata* (Muell. Arg.) Standl. of the same general region. *P. lanata* and its related species, as listed by Mueller in the *Flora Brasiliensis*, all differ in having much smaller corollas.

***Palicourea lasiantha* Krause, Bot. Jahrb. 40: 341. 1908.**

The species was described from Peru, and occurs also in Bolivia. It may now be reported from Colombia: Río Putumayo, on the Peruvian border, in forest, *Klug 1628*. A tree 6 meters high; flowers lilac.

***Palicourea ovalifolia* (Rusby) Standl. Field Mus. Bot. 7: 323. 1931. *Psychotria ovalifolia* Rusby, Bull. N. Y. Bot. Gard. 4: 371. 1907.**

Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug 1762*. A shrub 2 meters high; flowers yellow and red.

Heretofore the species has been known only from Bolivia, but now that its range has been extended to Colombia, it may be expected confidently in Amazonian Peru. It is not improbable that an earlier name may be found for this species, but I have been unable so far to discover one.

Palicourea Mansoana (Muell. Arg.), comb. nov. *Psychotria Mansoana* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 243. pl. 34. 1881.

Several collections of this rare species are represented in the Stockholm herbarium: Brazil (State of Matto Grosso): Santa Anna da Chapada, in ripa rivi in silva, September, 1902, G. O. A. Malme 2418. Santa Anna da Chapada, June, 1903, Malme 3484, 3484a.

Palicourea martinicensis, sp. nov.—Frutex omnino glaber ut videtur dense ramosus, ramis crassis teretibus olivaceis, internodiis brevibus; stipulae persistentes erectae in vaginam truncatam subincrassatam 2 mm. longam connatae, vagina in lobos 4 e basi triangulari subulato-attenuatos 2.5–3 mm. longos desinente; folia parva petiolata opposita coriacea, petiolo crassiusculo 4–9 mm. longo; lamina elliptica vel late elliptica, rarius elliptico-oblonga, 4–7.5 cm. longa 1.7–4 cm. lata longe sensim acuminata, acumine longe attenuato acuto, basi acuta vel interdum obtusa et abrupte acute decurrens, supra in sicco fusco-flavescens, lucida, costa venisque prominulis et conspicuis, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 7 obliquis gracilibus elevatis angulo semirecto vel paullo latiore adscendentibus arcuatis marginem fere attingentibus, nervulis obsoletis; inflorescentia terminalis erecta c. 2 cm. longe pedunculata, pedunculo crasso, cymoso-fastigiata densissime pauci- vel multiflora 2.5–3 cm. longa et aequilata basi trichotoma, ramis brevibus crassis suberectis basi bracteatis, bracteis subpersistentibus viridescentibus lineari-attenuatis suberectis plerumque 5–9 mm. longis, floribus cymoso-congestis sessilibus vel usque ad 6 mm. longe pedicellatis, pedicellis rectis supra incrassatis; hypanthium turbinatum 2–2.5 mm. longum basi acutum, calyce 5-partito, laciniis lineari-attenuatis vel lanceolato-oblongis 4–5 mm. longis erectis persistentibus; corolla perfecte evoluta non visa, in alabastro apice late obtusa extus glabra; bacca late ovoideoglobosa c. 8 mm. longa et aequilata apice breviter contracta, pyrenis 2 dorso crasse costatis, costis transverse rugosis.—Martinique: Piton de l'Alba, March, 1869, L. Hahn 802 (herb. Paris, type; duplicate in herb. Kew.). Casa Pilote, April, 1870, Hahn 198 (herb. Paris).

While there is some uncertainty regarding the generic position of the plant, there is little doubt that it is best referred to *Palicourea*. From all other West Indian species of the genus *Palicourea* it is conspicuously distinct in the narrow and distinctively elongate calyx lobes.

Palicourea punoensis, sp. nov.—Frutex, ramulis crassiusculis, vetustioribus fusco-ferrugineis subteretibus, novellis subacute tetragonis glabris, internodiis plerumque 2.5–4.5 cm. longis; stipulae persistentes glabrae erectae alte connatae 3–4 mm. longae profunde bilobae, lobis triangularibus acutis remotis vel approximatis, vagina interdum ad basin sparse hispidula; folia mediocria brevissime petiolata subcoriacea opposita, petiolo crasso glabro 3–4 mm. longo; lamina anguste lanceolato-oblonga 8–12.5 cm. longa 2.5–3.5 cm. lata longissime sensim attenuato-acuminata, basi acuta vel basin versus longe attenuata, supra in sicco brunnescens, glabra, costa venisque vix elevatis, anguste marginata, subtus pallidior, sparse minute fulvo-pilosula, ad costam gracilem elevatam hispidula, nervis lateralibus utroque latere c. 17 obliquis gracilibus prominentibus angulo lato adscendentibus prope marginem in nervum subdistinctum conjunctis, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis thyrsoida 2–4.5 cm. longe pedunculata, pedunculo recto densiuscule hispidulo, panícula interdum basi foliaceo-bracteata densissime multiflora 2.5–4 cm. longa 3–4 cm. lata basi trichotoma, ramis brevibus plerumque oppositis crassis dense hispidulis, bracteis glabris vel glabratis oblongis obtusis plerumque 2–3 mm. longis persistentibus ad basin ramorum insertis, floribus parvis in cymulas densas confertas dispositis sessilibus vel subsessilibus; hypanthium late obovoideum glabrum vel glabratum vix 0.5 mm. longum, calyce late campanulato glabrato breviter dentato, dentibus latissime triangularibus vel late ovatis obtusis vel acutiusculis; corolla viridescens extus glabra vel sparse hispidula in alabastro apice late obtusa, 5–6 mm. longa, tubo basi incrassato supra paullo dilatato, lobis ovali-ovatis obtusis tubo duplo brevioribus.—Peru: Between Tambo Yuncacoya and Tambo Cachicachi, on the road from Sandía to Chunchumoyo, Dept. Puno, alt. 1,800–2,200 meters, June 8, 1902, A. Weberbauer 1143 (herb. Berol., type).

A member of the group of *Palicourea macrobotrys* (R. & P.) R. & S., but that species differs constantly in its thin leaves, elongate and lax inflorescence, and much larger corolla.

Palicourea sclerophylla (Muell. Arg.), comb. nov. *Psychotria sclerophylla* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 239. 1881.

Palicourea toensis (Britt. & Wils.), comb. nov. *Psychotria toensis* Britt. & Wils. Mem. Torrey Club 16: 113. 1920. *Palicourea purpurascens* Urban, Symb. Antill. 9: 167. 1923.

Cuba: Camp La Gloria, south of Sierra Moa, Oriente, Cuba, *Shafer 8141*. Minas de Iberia, in cacumine Sierra Maestra ad Taco Bay, 800 meters, *Ekman 3779*, type collection of *Palicourea purpurascens*.

I have not seen *Shafer 4009*, the type collection of *Psychotria toensis*, but *Shafer 8141* was determined by Britton and Wilson as the same species. The latter collection is clearly conspecific with

Ekman 3779. The plant is referable to *Palicourea* rather than *Psychotria*, if the two genera are to be separated.

***Palicourea Toroi* Standl.** Field Mus. Bot. 7: 150. 1930.

Colombia: Prov. Barbacoas, *Triana 1716* (herb. Paris). Between Tuquerres and Barbacoas, Prov. Popayán, 900 meters, *Triana 1727* (P).

Heretofore only the type specimen of this species has been known.

***Palicourea triphylla* DC.** Prodr. 4: 526. 1830.

Although the species is common and widely distributed in other regions, only two collections have been listed from Colombia. The following represents an extension of range: Colombia: Forests of Fusagasugá, Prov. Bogotá, 1,800 meters, *Linden 823* (herb. Paris). The species grows ordinarily at or near sea level, hence the locality data are open to question.

***Palicourea virens* (Poepp. & Endl.), comb. nov.** *Psychotria virens* Poepp. & Endl. Nov. Gen. & Sp. 3: 33. 1845.

I have seen no authentic material of this species, but the collection listed below seems to agree well with the descriptions. The corolla of the specimen cited is merely obscurely puberulent, rather than hirtellous, as described, but I find no other differences. The type was collected at Ega.

Brazil: In silvis non inundatis circa Villa Braga prope cataractum infimum fluminis Tapajoz, State of Pará, October, 1922, *A. Ducke 18847* (herb. Berol.); a tall shrub, the inflorescences yellowish orange; corolla white.

***Posoqueria Mutisii*, sp. nov.**—Frutex vel arbuscula praeter inflorescentiam omnino glabra, ramulis teretibus crassiusculis, internodiis ut videtur elongatis; folia magna breviter petiolata subcoriacea, petiolo crasso 2 cm. longo; lamina lanceolato-oblonga vel anguste lanceolato-oblonga 18–25 cm. longa 5.5–7.5 cm. lata conspicue incrassato-marginata apice subspinoso-acuminata vel versus apicem longe sensim attenuata, basi late obtusa vel acuta, supra in sicco laete viridis costa prominente, nervis prominulis, subtus pallida, costa crassiuscula elevata, nervis ut venulis obsoletis; flores cymosi terminales, cymis circa trifloris vel multifloris, pedicellis crassis 6–10 mm. longis sparse hirtellis vel glabratis; hypanthium obconicum 2.5 mm. longum sparse hirtellum vel glabratum; calyx 2.5 mm. longus fere ad basin lobatus, lobis triangularibus acutis ciliolatis viridibus; corolla extus glabra, tubo gracillimo 13–14 cm. longo 1.5 mm. lato, lobis patentibus anguste oblongis obtusis 2–2.5 cm. longis.—Colombia: Without locality, *José Celestino Mutis 2257* (U. S. Nat. Herb., No. 1,560,305, type), 4947.

Resembling *P. longiflora* Aubl., which has much longer flowers and broader calyx lobes.

Psychotria apodocephala, sp. nov.—Frutex 1.5–2-metralis, trunco 2.5–5 cm. diam., ramulis gracillimis rigidis teretibus viridibus glabris, interdum compressis; stipulae persistentes in vaginam truncatam glabram 1.5 mm. longam connatae, vagina in setas 4 erectas 2–3 mm. longas desinente; folia opposita parva sessilia vel subsessilia rigide membranacea late ovato-elliptica vel oblongo-ovata 3–5.5 cm. longa 2–3 cm. lata abrupte longiuscule acuminata, acumine triangulari acuto attenuato, basi breviter cordata, in sicco luteo-viridis glabra, costa supra elevata, subtus fere concolor, costa arcte elevata gracili, nervis lateralibus utroque latere 5–6 gracillimis arcuatis marginem attingentibus angulo semirecto adscendentibus, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis capitata pauciflora sessilis, bracteis parvis inconspicuis linearibus, floribus arcte sessilibus; hypanthium breve, calyce vix 0.8 mm. longo remote dentato, dentibus late triangularibus acutiusculis; corolla albida extus glabra vel sparsissime puberula 4 mm. longa, lobis 4 oblongis obtusis suberectis 1.5–2 mm. longis intus glabris; stamina inclusa, stylo breviter exserto.—Colombia: El Humbo, Department of Boyaca, alt. 900 meters, edge of forest, September 19, 1932, A. E. Lawrence 442 (herb. Field Mus. No. 708,575, type).

A well-marked species, quite unlike any other known from Colombia; noteworthy for its small sessile inflorescences, and its small sessile leaves.

Psychotria arirambana, sp. nov.—Frutex parvus multiramosus, ramis gracilibus rigidis subteretibus puberulis, internodiis brevibus vel elongatis; vagina stipularis incrassata vix ultra 1 mm. longa, lobis brevissimis dentiformibus; folia parva brevissime petiolata coriacea, petiolo 1–2 mm. longo; lamina oblonga vel lanceolato-oblonga 2.5–4 cm. longa 9–15 mm. lata acuta basi late rotundata vel brevissime cordata glabra, supra olivacea lucida costa elevata, nervis prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 12 prominentibus arcuatis angulo semirecto adscendentibus marginem attingentibus, nervulis prominentibus arcte reticulatis; inflorescentia terminalis capitiformis subrecurva brevissime pedunculata densissime pauciflora c. 8 mm. lata, pedunculo puberulo, bracteis viridibus omnibus subaequilongis 4–5 mm. longis lanceolatis vel lanceolato-linearibus corollis longioribus glabris suberectis, floribus sessilibus; hypanthium breve glabrum, sepalis fere distinctis acutiusculis c. 0.6 mm. longis; corolla alba parce puberula in alabastro oblonga apice late rotundata c. 3 mm. longa.—Brazil: Campos do Ariramba, Rio Trombitas, civ. Pará, in fruticetis “campina-rana” prope flumen Jaramacará, December 4, 1910, A. Ducke 23100 (herb. Berol., type; fragment in herb. Field Mus.).

Somewhat suggestive of *Psychotria rubra* (Willd.) Muell. Arg., which, however, has much more elongate bracts and larger leaves that are acute at base.

Psychotria barbiflora DC. Prodr. 4: 509. 1830.

Brazil: Rio de Janeiro, Corcovado, October, 1874, *H. Mosén* 2519 (herb. Stockholm). Pernambuco, in 1838, *Gardner* (herb. Kew.); a shrub 1.5 meters high. Natividade, in 1840, *Gardner* 3227 (K); a shrub 1 meter high, in forest. Santa Cruz da Barra, Matto Grosso, in silvis primaevae, March, 1894, *Lindman* A.3201 (S). Santa Anna da Chapada, Matto Grosso, May, 1903, *Malme* (S). Rio de Janeiro, Nitheroy, December, 1901, *Dusén* 116 (S).

Psychotria Beyrichiana Muell. Arg. Flora 59: 542. 1876.

Brazil: Rio de Janeiro, *Ule* 3719 (herb. Berol.; fragm. in herb. Field Mus.). Rio Negro, Prov. Minas Geraes, January, 1888, *J. T. de Moura* 190 (herb. Berol.). Road between Monte Serrat and Ponte Maromba, Mount Itatiaya, Estação Biologica, 800–1,000 meters, *L. B. Smith* 1426 (Gray herb.; fragm. in F). Caldas, Minas Geraes, in 1875, *Regnell* III.1817 (herb. Stockholm, herb. Paris).

Psychotria boyacana, sp. nov.—Frutex 1.5–2-metralis, trunco 2.5–7 cm. diam., ramulis gracilibus dense breviter hispidulis; stipulae erectae in vaginam dense hispidulam 3 mm. longam connatae, vagina in lobos 4 hispidulos lineari-subulatos 4 mm. longos desinente; folia opposita mediocria breviter petiolata papyracea, petiolo crassiusculo 5–10 mm. longo hispidulo; lamina oblonga vel oblanceolata-oblonga 7–14 cm. longa 2.5–4 cm. lata subabrupte longissime attenuato-acuminata, acumine angustissimo 1.5–2 cm. longo longe sensim attenuato, basi obtusa vel acuta, supra in sicco viridis glabra, subtus paullo pallidior ubique sed ad venas densius hispidula, costa gracili elevata, nervis lateralibus utroque latere c. 11 arcuatis elevatis angulo latiusculo adscendentibus in marginem desinentibus, nervulis conspicue elevatis arcte reticulatis; inflorescentia terminalis e capitulis densis 3–4 racemose dispositis composita 2 cm. longe pedunculata erecta, rhachi dense pilosa, capitulis infimis breviter pedunculatis, pedunculis bracteis persistentibus viridibus ovatis usque ad 1 cm. longis villosis fulcratis, capitulis multifloris 8–10 mm. diam., bracteis viridibus rotundato-ovatis ad 8 mm. longis villosis acutis vel acuminatis involucrentibus; hypanthium breve dense villosum, calycis lobis linearibus erectis hypanthio duplo longioribus; corolla ochroleuca in alabastro obtusa dense villosa.—Colombia: La Chapón, Department of Boyaca, alt. 1,050 meters, edge of forest, July 14, 1932, *A. E. Lawrance* 317 (herb. Field Mus. No. 708,579, type).

Conspicuous characters are the few, racemously disposed, densely bracted heads, and the leaves, perfectly glabrous on the upper surface but densely yellowish-hispidulous beneath.

Psychotria brevicollis Muell. Arg. Flora 59: 548. 1876.

Brazil: Ponta Grossa, Paraná, in "Capão Grande," in silvula, 880 meters, *Dusén* 8042. Capão Grande, Paraná, April 9, 1909, *Dusén* (herb. Stockholm). Morretas, Paraná, *Dusén* 4348 (S).

Rio Uruguay, Santa Catharina, *Dusén 17774* (S). Therezina, Paraná, 980 meters, *Dusén 11236* (S). Alexandra, Paraná, *Dusén 11481* (S). Prov. São Paulo, *Saint-Hilaire 1307* (herb. Kew.). Prov. Rio de Janeiro, *Vauthier 47* (herb. Paris). Nouvelle Fribourg, *Claussen* (P). Without locality, *Vauthier 96* (herb. Kew.). Colonia Ipuhy, in silva primaeva, Rio Grande do Sul, *Lindman A.1453* (S).—Paraguay: Pirapó, in silva primaeva, *Lindman A.1811* (S).

Psychotria calocardia, sp. nov.—Frutex parvus ramosus praeter inflorescentiam omnino glaber, ramulis gracilibus rigidis teretibus olivaceis, internodiis elongatis vulgo foliis longioribus; vagina stipularis vix 1 mm. longa persistens truncata, lobis minutis dentiformibus; folia parva sessilia coriacea anguste oblongo-triangularia 2.5–4 cm. longa 8–18 mm. lata longe sensimque acuminata basi breviter cordata, supra in sicco olivacea sublucida costa prominente, nervis ut venulis prominulis, subtus flavescentia costa gracili valde elevata, nervis lateralibus utroque latere c. 10 gracilibus prominentibus inferioribus approximatis superioribus magis distantibus in marginem desinentibus, nervulis prominentibus arcte reticulatis, costa interdum parce puberula; inflorescentia terminalis capituliformis erecta 13 mm. longe pedunculata, pedunculo puberulo recto, ramis brevissimis supra basin bracteatis, bracteis linearibus acutis 3–4 mm. longis suberectis, floribus paucis sessilibus; calyx remote brevissime dentatus; fructus subdidymo-globosus glaber 3.5 mm. latus, coccis late rotundatis dorso acutiuscule costatis.—Brazil: Faro, civ. Pará, in arenosis Campos do Chicodacá, August 21, 1907, *A. Ducke 23105* (herb. Berol., type; fragm. in herb. Field Mus.).

A relative of *Psychotria cuspidata* Willd., or at least of some of the forms referred to that species by Mueller in the *Flora Brasiliensis*, but conspicuously different in its sessile cordate leaves.

Psychotria capituliflora (Muell. Arg.), comb. nov. *Mapouria capituliflora* Muell. Arg. *Flora* 59: 495. 1876.

Brazil: Serra do Itatiaia, Mont Serrat, ad rivulum, 900 meters, October, 1902, *Dusén 2103* (herb. Stockholm).

Psychotria cephalantha (Muell. Arg.), comb. nov. *Mapouria cephalantha* Muell. Arg. *Flora* 59: 495. 1876.

Psychotria chaenotricha DC. *Prodr.* 4: 509. 1830.

Brazil: Aguas Novas, Rio de Janeiro, *John Miers 3859* (herb. Kew.).

Psychotria chlorotica Muell. Arg. var. *lanceolata* Muell. Arg. *Flora* 59: 542. 1876.

Brazil: Santa Rita do Passa Quatro, São Paulo, November, 1897, *Ernst Hemmendorff 37* (herb. Stockholm), 35 (S). Sra. de Itapirapuan, Matto Grosso, in silva primaeva, April, 1894, *C. A. M. Lindman A.3331* (S); flowers yellowish white. Alagoas, *Netto*

(herb. Paris). Prov. Goyaz, in 1840, *Gardner 3771* (herb. Kew.); shrub 1–1.5 meters high; flowers white.

Psychotria choriophylla Standl. Field Mus. Bot. 7: 89. 1930.

The species was based upon *Triana 3149* from Provincia de Buenaventura. The following specimen, although bearing a different number, is probably of the same collection: Colombia: El Guineo, near Buenaventura, Prov. Chocó, 10 meters, 1851–57, *J. Triana 1725* (herb. Paris).

Psychotria cincta Standl. Field Mus. Bot. 7: 90. 1930.

The species was based upon a single collection from Córdoba, Dagua Valley, Colombia. Apparently conspecific is the following: Colombia: Intendencia del Chocó, La Concepción, 15 km. east of Quibdó, 75 meters, April–May, 1931, *W. A. Archer 2001* (U. S. Nat. Herb.). The distinctive leaves may be as much as 20 cm. long and 10 cm. wide, and the slender stipule lobes up to 18 mm. The collector describes the plant as a slender shrub 1–3 meters high, with gray-green fruit.

Psychotria Cooperi Standl. Field Mus. Bot. 4. 296. 1929.

The species was described from the Chiriquí and Bocas del Toro regions of Panama. Recent exploration has disclosed its occurrence also in Colombia: La Concepción, Intendencia del Chocó, 15 km. east of Quibdó, 75 meters, April–May, 1931, *W. A. Archer 2079, 1937*. A bushy shrub 1–2 meters high; flowers white; fruit dark bluish black. Vernacular name, “amarga.” A decoction of the plant is employed in domestic medicine as a remedy for rheumatism.

Psychotria cuspidata Willd. var. *compacta* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 288. 1881.

Brazil: Prov. Espirito Santo, 1816–21, *Auguste de Saint-Hilaire 367* (herb. Paris), *363* (herb. Paris). Rio Purus, September, 1874, *J. W. H. Traill 411* (herb. Kew.); a low shrub; flowers white or yellowish. Rio Purus, upper Amazon, September, 1874, *Traill 413* (K); a shrub with yellowish white flowers. Lago Cerrado, Rio Juruá, October, 1874, *Traill 412* (K); a shrub with white flowers.

Psychotria Duckei, sp. nov.—Frutex 1–1.5 m. altus ramosus omnino glaber, ramis gracillimis flexuosis teretibus, novellis in sicco fuscis, vetustioribus ochraceis; stipulae persistentes, vagina brevissima, lobis lineari-attenuatis 6–7 mm. longis rigidis erectis; folia inter minora breviter petiolata opposita crasse membranacea vel fere subcoriacea, petiolo vix 2 mm. longo; lamina lineari-lanceolata 6–9 cm. longa 6–12 mm. lata longissime anguste attenuata basi subobtusata vel longe attenuata, supra in sicco fusco-olivacea costa elevata nervis obsoletis, subtus pallida flavescens costa gracili

elevata, nervis lateralibus utroque latere c. 10 prominulis angulo angusto adscendentibus, nervulis prominulis laxè reticulatis; inflorescentia terminalis erecta cymoso-corymbosa sessilis et basi trichotoma vel pedunculata 2.5–6 cm. longa laxè multiflora, ramis brevibus vel elongatis, floribus sessilibus, bracteis basilaribus vel pro parte suprabasilaribus persistentibus lanceolatis vel oblongis acutis 3–5 mm. longis; fructus depresso-globosus 4–5 mm. latus; calyx subtruncatus.—Brazil: São Luiz do Maranhão ad urbem loco Anil silva secundaria, June 4, 1907, A. Ducke 23102 (herb. Berol., type; fragm. in herb. Field Mus.).

An ally of the widely distributed *Psychotria capitata* Ruiz & Pavón, but immediately distinguishable from all forms of that species by the remarkably narrow leaves, whose form is approached by few species in the genus.

***Psychotria educta*, sp. nov.**—Frutex 3-metralis, ramulis crassiusculis in sicco subcompressis fuscis glabris, internodiis brevibus; stipulae deciduae latissime ovatae vel ellipticae 2–2.5 cm. longae acutae vel acuminatae crassae fuscae sparse ferrugineo-villosulae petiolis aequales vel longiores; folia magna brevissime petiolata opposita chartacea, petiolo crasso 1–1.5 cm. longo interdum fere ad basin marginato; lamina oblanceolata, oblongo-oblanceolata vel rhombico-oblanceolata 23–33 cm. longa 7–10 cm. lata longè sensim acuminata, acumine attenuato acuto, basin versus longè sensim attenuata, supra in sicco cinereo-viridescens, glabra vel ad costam obscure minute puberula, costa venisque non elevatis, subtus ferruginea, primo sparse ferrugineo-villosula vel puberula, serius glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 16 gracilibus prominentibus valde obliquis angulo semirecto vel saepe multo latiore adscendentibus plus minusve arcuatis prope marginem conjunctis nervulis obscuris laxè reticulatis; inflorescentia terminalis 3 cm. longè pedunculata laxè paniculata magna (perfecta non visa), ramis gracilibus plerumque verticillatis patentibus vel subreflexis ferrugineis sparse puberulis vel glabris basi bracteatis, bracteis deciduis triangularibus acuminatis puberulis vel villosulis 1–3 mm. longis patentibus, floribus ad apices ramulorum umbellato-congestis, pedicellis crassiusculis minutissime puberulis vel glabris plerumque 1–2 mm. longis; hypanthium obconicum 1 mm. longum obscure sparse villosulum vel glabratum, calyce late campanulato 1.2 mm. longo truncato remote et minute repando-denticulato; corolla ochroleuca extus glabra in alabastro apice obtusa 2.5 mm. longa, tubo obconico fauce non barbato, lobis 5 recurvis triangularibus acutis intus glabris; antherae lineari-oblongae 1.5 mm. longae subexsertae.—Peru: In upland forest at edge of stream, mouth of the Río Santiago, upper Río Marañón, alt. 160 meters, September, 1924, G. Tessmann 4057 (herb. Berol., type).

Similar to the more northern *Psychotria grandis* Swartz, especially in the form of the stipules, but differing in the shape of the leaves and in calyx characters.

Psychotria Ernesti Krause, Verh. Bot. Ver. Brandenb. 50: 109. 1908.

The species, described from Brazil, has been known only from the type collection, but it may be reported now from Peru and Colombia. The following specimens have been examined:

Brazil: Marary Juruá, State of Amazonas, September, 1900, *Ule 5136*; photo. and fragm. of the type, from herb. Berol.—Peru: Fortaleza, Yurimaguas, Dept. Loreto, 155–210 meters, a shrub in forest, *Williams 4242, 4341*.—Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug 1715*.

Psychotria flavens, nom. nov. *Mapouria xanthophylla* Muell. Arg. Flora 59: 496. 1876, non *P. xanthophylla* Muell. Arg. 1881.

Psychotria fulgens Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 257. 1881.

Brazil: Prov. Espirito Santo, 1816–21, *Auguste de Saint-Hilaire 333* (herb. Paris).

Psychotria Hartwegiana Standl. Field Mus. Bot. 7: 95. 1930.

Colombia: Forêts du versant du Tolima, Prov. Mariquita, 1,200–1,500 toises, January, 1843, *Linden 961* (herb. Paris); flowers orange. Prov. Barbacoas, 1,200 meters, *Triana 1678* (P). El Gallego, Cordillera de Quindío, Prov. Mariquita, 2,660 meters, *Triana 1677* (P). El Palmar, Quindío, *Goudot* (P); flowers orange.

Psychotria hospitalis Standl. Field Mus. Bot. 8: 199. 1930.

The specimen cited here agrees fairly well with the type, which was collected in the Department of Loreto, Peru. The species is an addition to the known flora of Colombia. Colombia: Umbría, Comisaría del Putumayo, 325 meters, in forest, *Klug 1842*.

Psychotria insolens, sp. nov.—Ramuli crassi, vetustioribus cortice crasso suberoso ochraceo obtuse tuberculato obtectis, novellis fuscis sparse puberulis et pilosulis, internodiis brevibus; stipulae breviter connatae bipartitae, lobis rotundato-ovatis incrassatis et serius suberosis, apice abrupte in aristam 5–6 mm. longam rigidam contractae; folia breviter petiolata majuscula opposita subcoriacea, petiolo gracili 1–2.5 cm. longo sparse minutissime puberulo vel glabrato; lamina oblonga vel elliptico-oblonga 11.5–21 cm. longa 4–7 cm. lata acuta vel subobtusa basi acuta, supra in sicco fusca, glabra, costa venisque prominentibus, subtus fere concolor, minutissime pallido-puncticulata, praesertim ad venas ferrugineo-puberula vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 20 gracilibus prominentibus angulo latiusculo adscendentibus subarcuatis in marginem desinentibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis corymbiformis 8–9 cm. longe pedunculata trichotoma c. 3.5 cm. longa et 6 cm. lata conspicue bracteata, bracteis basi ramorum sitis, basilaribus 2 anguste spathulatis obtusis 2 cm. longis, superioribus spathulatis 1–1.5 cm. longis

obtusis fuscis minute puberulis venosis basin versus attenuatis subsessilibus, floribus cymosis sessilibus vel breviter crasse pedicellatis interdum secundis, cymulis in capitula 3 composita obscure lobata congestis; hypanthium obovoideum 1.7 mm. longum minutissime puberulum; calyx late infundibuliformis 6–8 mm. longus sparse minute puberulus conspicue venosus in sicco fuscus, tubo 2.5–3 mm. lato in limbum 6–7 mm. latum brevissime inaequaliter 5-lobum expanso, lobis late rotundatis; cetera ignota.—Brazil: Engenheiro Reeve, State of Espirito Santo, alt. 500 meters, February 22, 1903, *A. Robert* (herb. Kew., type).

This remarkable *Psychotria* seems to be referable to Mueller's section *Solenocalyx*, which is characterized by a large corolloid calyx. *P. insolens* does not resemble closely any of the species previously referred to that group. In general appearance it is suggestive of some species of *Cephaelis*, but no member of that genus is known to have such a calyx as that of the plant here described.

***Psychotria jasminoides* Standl.** Field Mus. Bot. 8: 211. 1930.

In the Kew herbarium the species is represented by two specimens, either of which may be the type collection.

Brazil: Engenheiro Reeve, Espirito Santo, 500 meters, February "30," 1903, *A. Robert*; February 18, 1903, *Robert*.

***Psychotria Kuhlmannii*, sp. nov.**—Frutex inflorescentiis exceptis omnino glaber, ramulis crassiusculis teretibus, vetustioribus cinereis, novellis subcompressis fuscis, internodiis brevibus; stipulae caducae, non visae, ut videtur acutae vel acuminatae; folia parva brevissime petiolata opposita coriacea, petiolo crassiusculo 3–4 mm. longo; lamina anguste oblanceolato-oblonga 4.5–7.5 cm. longa 1.2–2 cm. lata acuta vel subobtusata basin versus longe sensim attenuata, basi ipsa acuta, supra in sicco fusca, valde lucida, costa venisque prominulis, subtus fusco-brunnescens, sublucida, costa gracili elevata, nervis lateralibus utroque latere c. 16 gracillimis prominulis angulo latiusculo adscendentibus obliquis subarcuatis prope marginem conjunctis, nervulis obscuris subimpressis; inflorescentia terminalis cymoso-corymbosa erecta 2–3 cm. longe pedunculata c. 2.5 cm. longa et aequilata dense multiflora trichotoma, ramis basilaribus suberectis crassiusculis subacute angulatis sparse obscure puberulis vel glabratis, bracteis ad basin ramulorum sitis ovato-triangularibus 1–2 mm. longis persistentibus acutis ciliolatis, floribus arcte sessilibus dense capitellato-congestis; hypanthium obovoideum glabrum 0.7 mm. longum, calyce aequilongo late campanulato obscure repandodenticulato; corolla alba 2.5 mm. longa extus sparse minutissime puberula vel glabrata in alabastro apice late obtusa, tubo obconico crasso in fauce dense albo-barbato, lobis 5 triangulari-oblongis obtusis patentibus tubo aequilongis intus glabris; antherae semi-exsertae; stylus exsertus.—Brazil: Rio Arinos, Matto Grosso, edge of river, December, 1914, *J. G. Kuhlmann 1449-K* (herb. Berol., type).

Referable to the subgenus *Mapouria*. Distinguished by the elongate, narrow, strongly coriaceous, and strikingly lustrous leaves.

***Psychotria lancigera*, sp. nov.**—Frutex, ramis crassiusculis pallidis glabris in sicco striatis angulo recto divergentibus, internodiis elongatis; stipulae in vaginam latam truncatam pallidam glabram 1–1.5 mm. longam connatae, vagina lobis 4 vix 1 mm. longis subulatis erectis onusta; folia brevissime petiolata vel subsessilia parva coriacea opposita, petiolo crasso usque ad 2 mm. longo; lamina oblongo-lanceolata 4.5–5.5 cm. longa 1.3–1.8 cm. lata longissime sensim attenuato-acuminata, basi late rotundata vel breviter cordata, marginibus conspicue incrassatis latis pallidis, supra glabra griseo-viridis costa subdepressa, venis prominulis, plus minusve lucida, subtus pallida, costa crassiuscula elevata, nervis lateralibus utroque latere 8–10 elevatis fere rectis angulo semirecto adscendentibus in marginem desinentibus, venulis prominulis laxe reticulatis, ubique minutissime pruinoso-puberula; inflorescentia terminalis 10–14 mm. longe pedunculata erecta cymoso-umbellata densissime multiflora c. 1.5 cm. longa et 2 cm. lata basi bracteis 4 ovatis 3–4 mm. longis abrupte acuminatis minute puberulis fulcrata, pedunculo minute puberulo, ramis primariis paucis crassis rubellis puberulis adscendentibus, ramis secundariis brevissimis basi bracteatis, bracteis lanceolatis vel ovatis acuminatis brevibus persistentibus, floribus sessilibus; hypanthium 0.7 mm. longum crasse columnare puberulum, calyce aequilongo profunde lobato, lobis late ovatis vel triangularibus acutis vel acuminatis extus minute puberulis; corolla extus dense puberula in alabastro apice late rotundata vel subdepressa evoluta 7 mm. longa, tubo insuper paullo dilatato, lobis c. 1.8 mm. longis late oblongis obtusis subpatentibus.—Venezuela: Amazonas Territory, Cerro Yapacana, upper Río Orinoco, alt. 100 meters, April, 1931, *E. G. Holt & E. R. Blake* 752 (U. S. Nat. Herb. No. 1,517,562, type).

The affinities of this species are not obvious. The plant is well marked by its handsome, narrow, elongate, coriaceous leaves with rounded or shallowly cordate base. The nerves run directly into the broad cartilaginous margin.

***Psychotria lepida*, sp. nov.**—Arbor 6-metralis, trunco 4–5 cm. diam. praeter inflorescentiam omnino glabra, ramulis in sicco compressis gracilibus pallide brunnescentibus, internodiis elongatis; vagina stipularis 1.5 mm. tantum longa truncata, lobis utroque latere 2 brevissimis obtusis c. 1.5 mm. longis; folia magna petiolata firme membranacea, petiolo 1.5–3 cm. longo; lamina oblongo-elliptica 19–27 cm. longa 7–11.5 cm. lata breviter sensim acuminata, basi acuta et abrupte contracta, supra in sicco subviridis costa elevata, nervis prominentibus, subtus fere concolor, costa gracili valde elevata, nervis lateralibus utroque latere c. 21 gracillimis prominentibus angulo lato adscendentibus arcuatis prope marginem conjunctis, nervulis transversis subparallelis laxe reticulatis; in-

florescentia terminalis (perfecta non visa) erecta pedunculata dense cymoso-paniculata c. 3.5 cm. longa et 5.5 cm. lata multiflora basi trichotoma, ramis primariis infimis adscendentibus 1 cm. longis vel paullo ultra puberulis, ramis omnibus basi bracteatis, bracteis ellipticis vel obovatis plerumque 10–15 mm. longis fere glabris minutissime ciliolatis obtusis vel acutiusculis in sicco pallidis, floribus sessilibus; hypanthium late columnare 1 mm. longum glabrum, calyce campanulato 1.5 mm. longo glabro breviter acute dentato; corolla extus glabra, tubo gracili supra vix dilatato 9 mm. longo, lobis luteis anguste oblongis duplo brevioribus; stylus exsertus.—Peru: Mouth of Río Santiago, upper Río Marañón, alt. 160 meters, in upland forest, September 18, 1924, *G. Tessmann 4073* (herb. Berol., type). In the same general region, but without definite locality, *Tessmann 3952* (herb. Berol.).

A species of no particularly obvious relationships, somewhat suggestive of *P. lupulina* Benth. Outstanding in its large many-nerved leaves, and in the showy inflorescence with numerous large, brightly colored bracts.

Psychotria limonensis Krause, Bot. Jahrb. 54: Beibl. 119: 43. 1916.

Colombia: Villavicencio, Prov. Bogotá, 450 meters, 1851–57, *Triana 1698* (herb. Paris). Ibagué, 1844, *Goudot* (P).

Psychotria Lindenii Standl. Field Mus. Bot. 8: 71. 1930.

The species was based upon *Linden 1419*, labeled as coming from Colombia, but believed by the writer at the time of description to have been collected perhaps in Venezuela. That the species really does occur in Colombia is attested by the following specimen: Colombia: Prov. Antioquia, 1851–57, *J. Triana 1724* (herb. Paris).

Psychotria longipes Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 354. 1881.

Brazil: Rio de Janeiro, *Glaziou 4995* (herb. Stockholm). Prov. Rio de Janeiro, *Vauthier 57* (herb. Paris). Villa Velha, Paraná, in silva primaeva, *Dusén 14835*. Ponta Grossa, Paraná, in silvula, 880 meters, *Dusén 11625*. Carvalho, Paraná, September 13, 1911, *Dusén* (S); *Dusén 13323* (S). Villa Velha, Paraná, *G. Jänssan 221a* (S).

Psychotria pachyneura Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 359. 1881.

Brazil: "Environs de Rio Janeiro et d'Ouro Preto," *Glaziou 14901* (herb. Kew.). Minas Geraes, in 1840, *P. Claussen* (K).

Psychotria luxurians Rusby, Mem. Torrey Club 6: 50. 1896.

The species has been known heretofore from Ecuador and Bolivia. It may be reported now from Colombia: Las Pavas, Monte Quindío, 1,700 meters, 1851–57, *J. Triana 1683* (herb. Paris).

Psychotria myriantha Muell. Arg. *Flora* 59: 549. 1876.

Brazil: Estado de Rio de Janeiro, *Ule 4912* (herb. Berol.). Rio de Janeiro, *Wilkes Exped.* (U. S. Nat. Herb.). Campinas, São Paulo, *Campos Novaes 1445* (B). Prov. Rio de Janeiro, *Saint-Hilaire 8* (herb. Paris). Rio de Janeiro, *Gardner 5489* (herb. Kew.).

Psychotria nautensis, sp. nov.—Arbor 5.5 m. alta subramosa, ramulis crassiusculis fuscis obtuse tetragonis glabris; stipulae persistentes suberectae 5–6 mm. longae glabratae profunde bifidae, lobis semiovatis acutis; folia magna breviter petiolata opposita subcoriacea, petiolo gracili 1–2.5 cm. longo minute puberulo vel glabrato; lamina anguste oblanceolato-oblonga 18–28 cm. longa 6–7 cm. lata sensim longiuscule acuminata vel interdum subrotundata et abrupte breviacuminata, acumine obtusiusculo, basin versus longissime sensim attenuata, supra in sicco fusca, glabra, costa venisque non elevatis, subtus pallidior, brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 13 gracillimis prominentibus angulo latiusculo interdum fere recto abeuntibus subarcuatis juxta marginem conjunctis, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis vix 1 cm. longe pedunculata cymosopaniculata laxissime diffuse ramosa 15–20 cm. longa et aequilata, repetite ramosa, ramis gracilibus basi bracteatis patentibus vel saepius reflexis dense minute pilis patentibus fulvis sordidis pilosulis, bracteis lanceolatis vel oblongis plerumque 3–5 mm. longis acutis vel obtusis concavis minute pilosulis, floribus arcte sessilibus ad apices ramulorum et in dichotomiis subcapitatis bracteatis, bracteis ellipticis obtusis 2–3 mm. longis obtusis; hypanthium cum calyce c. 2 mm. longum minute patenti-pilosulum, calyce late campanulato truncato; corolla alba in alabastro 6–7 mm. longa obtusa crassiuscula densissime pilis brevibus ochraceis patentibus villosula; antherae 5 linearia.—Peru: Nauta, near the mouth of the Río Ucayali, in silvis recentioribus, April, 1855, *R. Spruce 3863* (herb. Kew., type).

A species of distinctive and unusual appearance, especially because of the large, diffuse panicles, and the unusual arrangement of the flowers; probably related to *Psychotria Franquevilleana* Muell. Arg.

Psychotria necopinata, sp. nov.—Omnino glabra, ramulis crassis teretibus fuscis laevibus, internodiis elongatis; stipulae erectae persistentes in vaginam ut videtur subtruncatam (an breviter lobatam?) incrassatam connatae; folia magna breviter petiolata opposita subcoriacea, petiolo crassiusculo 0.4–2 cm. longo; lamina oblonga vel anguste oblonga 15–27 cm. longa 5–6 cm. lata longiuscule acuminata, acumine angusto attenuato, basi acuta, supra in sicco flavescenti-olivacea, costa venisque ut quoque nervulis prominentibus, lucida, subtus concolor, costa crassiuscula elevata, nervis lateralibus utroque latere c. 23, aliis 2–3 fere aequalibus parallelis inter paria interpositis, prominentibus, gracilibus, angulo recto abeuntibus rectis, in marginem desinentibus, nervulis prominulis

arcte reticulatis; inflorescentia terminalis 6 cm. longe pedunculata erecta c. 2.5 cm. longa et 4.5 cm. lata, e capitulis 3 brevissime pedunculatis composita, capitulis lateralibus reflexis, basi bracteatis, bracteis liberis, exterioribus 2–2.5 cm. longis 4–5 mm. latis lineariblongis concavis longe attenuatis ut videtur rubellis vel purpureis basi subsaccatis, interioribus brevioribus sed conformibus, floribus numerosis dense capitato-congestis sessilibus; hypanthium 0.6 mm. longum, calyce late campanulato 1.5–2 mm. longo truncato vel undulato; corolla juvenilis 6–7 mm. longa in alabastro attenuata et apice minute 5-tuberculata; cetera ignota.—Brazil: Cucuhy, Rio Negro, State of Amazonas, alt. 120 meters, February, 1930, *E. G. Holt & W. Gehriger 386* (herb. Field Mus. No. 625,063, type). Rio Negro, "*Herb. Lusit.*" (herb. Paris).

A plant of striking appearance, probably a relative of *Psychotria pacimonica* Muell. Arg. *P. necopinata* is unusual in its large, shining, closely veined leaves, and in the large, elongate bracts of the flower heads.

Psychotria nitidula C. & S. *Linnaea* 4: 25. 1829.

Brazil: Rio de Janeiro, *Glaziou 18297* (herb. Berol., herb. Kew.). Theresopolis, Serra dos Orgaos, Prov. Rio de Janeiro, February, 1888, *J. T. de Moura 205* (B). Prov. Rio de Janeiro, *Saint-Hilaire 17* (herb. Paris). Rio de Janeiro, *Fra Leandro de Sacramento* (P). Rio de Janeiro, *Miers 3696* (K, P). Near Rio de Janeiro, February, 1824, *Gaudichaud* (P). Canoas prope Porto Alegre, Rio Grande do Sul, in silvula umbrosa, *Malme 1475* (herb. Stockholm); a shrub 1.7 meters high; fruit handsome blue.

Psychotria nudiceps Standl. *Field Mus. Bot.* 8: 378. 1931.

Described from eastern Peru, this species may be reported now also from adjacent Brazil: Seringal S. Francisco, Rio Acre, October, 1911, *E. Ule 9843* (herb. Kew.); a shrub 1–5 meters high; flowers yellowish white.

Psychotria obfuscata Muell. Arg. in *Mart. Fl. Bras.* 6, pt. 5: 377. 1881.

The only specimen cited by Mueller is the type, *Sello 5799*, which is represented in the herbarium of Field Museum by a photograph and fragment, received from the Berlin Botanical Garden. The following collections apparently represent the same species:

Brazil: Santos, in 1875, *Mosén 3415* (herb. Stockholm). Prov. São Paulo, *Gaudichaud 541* (herb. Paris). Near Santos, São Paulo, *Jard. Bot. Rio de Jan. 1699* (herb. Berol.).

Psychotria opima, sp. nov.—Frutex metralis ramosus, ramulis gracilibus teretibus fusco-ferrugineis glabris, internodiis elongatis; stipulae persistentes in vaginam brevissimam connatae, vagina in lacinias 4 setiformes erectas glabras remotas 7 mm. longas desinente;

folia magna breviter petiolata opposita membranacea, petiolo gracili glabro 1–2 cm. longo; lamina oblongo-elliptica usque ad late elliptica 16–25 cm. longa 8–12 cm. lata subabrupte longiacuminata, acumine triangulari acutissime attenuato, basi obtusa vel subrotundata et abrupte contracta atque breviter decurrens, supra in sicco fusca, sublucida, costa venisque prominulis, subtus fere concolor, sublucida, costa gracili elevata, nervis lateralibus utroque latere c. 12 gracilibus prominentibus remotis angulo latiusculo abeuntibus subarcuatis obliquis marginem attingentibus, nervulis transversis crebre parallelis undulatis vel interdum geniculatis prominulis; inflorescentia terminalis foliis multo brevior paniculata erecta 5 cm. longe pedunculata c. 10 cm. longa et 7 cm. lata laxiuscule multiflora, basi trichotoma, ramis superioribus oppositis vel alternis sparsis gracilibus dense puberulis, floribus sessilibus in cymulas parvas paucifloras dispositis, bracteis ad basin ramulorum sitis minutis; hypanthium cum calyce 1 mm. longum sparse puberulum vel glabratum, calyce patente obsolete repando-denticulato; corolla lutescens extus puberula in alabastro apice minute 5-cornuta, tubo cylindraceo 4 mm. longo supra vix dilatato fauce non barbato, lobis 5 oblongis obtusis patentibus intus glabris tubo duplo brevioribus; antherae oblongo-lineares longe exsertae fere 2 mm. longae; stylus inclusus.—Peru: Lower Río Napo, in inundated forest, alt. 100 meters, August 1, 1924, *G. Tessmann 3710* (herb. Berol., type).

In general appearance the plant somewhat resembles *Psychotria myriantha* Muell. Arg., a species of southern Brazil.

***Psychotria pandensis*, sp. nov.**—Omnino glabra, ramulis subgracilibus subteretibus in sicco plus minusve purpurascens, internodiis elongatis; stipulae persistentes erectae in vaginam truncatam incrassatam 3–4 mm. longam connatae, vagina in lobos 4 triangulari-ovatos obtusos 3 mm. longos desinente; folia magna petiolata opposita subcoriacea oblongo-elliptica 16–23 cm. longa 7–10 cm. lata apice acuta et abrupte caudato-acuminata, acumine fere lineari longe attenuato 2 cm. longo, basi acuta et interdum obliqua, supra in sicco viridescens, lucida, costa venisque prominentibus, subtus vix pallidior, costa gracili elevata purpurascens, nervis lateralibus utroque latere c. 17 gracilibus prominentibus angulo recto divergentibus leviter curvis prope marginem conjunctis, nervulis prominulis laxissime reticulatis; inflorescentia terminalis erecta 6 cm. longe pedunculata capituliformi-contracta dense multiflora breviter lobata basi trichotoma, ramis primariis 5–10 mm. longis crassis basi vel paullo supra basin bracteatis, bracteis omnibus linearibus vel lanceolato-linearibus purpurascens plerumque 1–1.5 cm. longis, interdum longioribus, attenuatis obscure ciliolatis persistentibus, floribus dense congestis sessilibus bracteatis; bacca didyma basi et apice profunde constricta, c. 7 mm. lata et 5 mm. alta, pyrenis dorso late rotundatis laevibus; calyx (perfectus non visus) minutus ad apicem baccae persistens; cetera ignota.—Colombia: Fusagasugá and Pandi, Prov. Bogotá, alt. 2,000 meters, 1851–57, *J. Triana 1709* (herb. Paris, type).

Because of the form of its fruit, the plant is clearly related to *Psychotria cuspidata* Bredem., but the inflorescences are altogether different in the two species.

Psychotria paracatuensis, nom. nov. *Mapouria corymbifera* Muell. Arg. Flora 58: 458. 1876, non *Psychotria corymbifera* Muell. Arg. 1881.

Psychotria paraguariensis Chod. & Hassl. Bull. Herb. Boiss. II. 4: 177. 1904.

Paraguay: Between Río Apo and Río Aquidabán, edge of forest, *Fiebrig 4320* (herb. Paris); a shrub 2 meters high; flowers white. Colonia Presidente González, in silva primaeva, August, 1893, *Lindman A.1763* (herb. Stockholm); a very slender shrub 1–2 meters high.

Psychotria patentinervia Muell. Arg. Flora 59: 543. 1876.

Brazil: Rio de Janeiro, *Widgren 684* (herb. Stockholm). Without locality, *Widgren 1230* (S). Sororocaba, Prov. São Paulo, in ripa umbrosa rivuli silva primaeva, February, 1875, *Mosén 3411* (S); December, 1874, *Mosén 2876* (S). Corcovado, Prov. Rio de Janeiro, February, 1895, *Ule 3806* (herb. Berol.). Cubatão, São Paulo, March, 1923, *August Gehrt 8225* (B). Without locality, *Burchell 3644* (herb. Kew.), 2550 (K).

Psychotria phaneroplexa, sp. nov.—Fruticulus omnino glaber, ramis crassiusculis dense foliatis fusco-brunneis subteretibus; vagina stipularis incrassata vix 1 mm. longa, lobis brevissimis dentiformibus; folia parva subsessilia crasse coriacea, petiolo vix 1 mm. longo; lamina forma variabilis oblonga lanceolato-oblonga vel rarius elliptica vel elliptico-obovata 1.5–5 cm. longa 1.3–2 cm. lata acuta vel rotundata et mucronata, basi late rotundata vel anguste subcordata, supra sublucida olivacea costa nervisque valde elevatis, subtus flavescens pallidior, costa valde elevata, nervis lateralibus utroque latere c. 15 approximatis elevatis angulo semirecto vel latiore adscendentibus marginem attingentibus et in nervum marginale conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis breviter pedunculata capitiformis densissime multiflora, ramis brevissimis, bracteis ut videtur viridibus ellipticis vel lanceolato-ellipticis acutis 4–5 mm. longis coriaceis conspicue elevato-nervosis, floribus arcte sessilibus; hypanthium glabrum late obconicum, sepalis fere distinctis anguste triangularibus acutiusculis erectis 0.8 mm. longis; corolla alba in alabastro 2.5 mm. longa extus glabra apice late rotundata.—Brazil: Campina do Perdido prope Bella Vista, Rio Tapajoz, civ. Pará, December 6, 1915, *A. Ducke 23114* (herb. Berol., type).

Referable to the group *Inundatae*, as treated by Mueller in the *Flora Brasiliensis*. Noteworthy for the small, leathery, conspicuously nerved leaves, broad or shallowly cordate at the base and merely acute to rounded and mucronate at the apex; also for the indurate and conspicuously veined bracts of the inflorescence.

Psychotria phoeniciana Standl. Journ. Wash. Acad. Sci. 16: 17..1926.

Of this species, known heretofore only from the type, which was collected in Chiapas, several additional collections have come to hand recently:

Mexico: Teotalcingo, June, 1842, *Liebmann 9* (herb. Kew.). Petlapa, June, 1842, *Liebmann 8* (K), *9* (K). Without locality, *Liebmann 10* (K). Tanetze, August, 1842, *Liebmann 82* (K). Cordillera of Oaxaca, 1,950 meters, August, 1840, *Galeotti 2602* (K); flowers white.

Psychotria pluriceps, sp. nov.—Frutex omnino glaber, ramulis gracilibus rectis subteretibus olivaceis, internodiis valde elongatis; stipulae erectae persistentes viridescentes in vaginam 1 mm. longam connatae, vagina in lobos 4 remotos anguste triangulari-oblongos acutos desinente; folia majuscula breviter petiolata opposita membranacea, petiolo gracili c. 1 cm. longo; lamina ovato-oblonga vel elliptico-oblonga 15–23 cm. longa 6–8.5 cm. lata subabrupte caudato-acuminata, acumine late lineari longe attenuato, basi acuta vel subabrupte contracta et breviter cuneato-decurrens, supra in sicco olivacea, sublucida, costa venisque prominentibus, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 14 gracillimis prominentibus pallidis angulo fere recto divergentibus subarctatis prope marginem conjunctis, nervulis pro parte horizontalibus et nervis parallelis prominulis laxè reticulatis; inflorescentia parva terminalis capitellato-paniculata erecta 7 mm. longe pedunculata c. 2 cm. longa et 3 cm. lata, ramis paucis, basilaribus radiatim verticillatis patentibus vel subreflexis gracilibus rectis olivaceis, floribus arcte sessilibus in capitula 4–6 mm. lata dense pauciflora plerumque pedunculata dispositis, ramulis basi bracteatis, bracteae viridibus patentibus oblongo-triangularibus persistentibus acuminatis; hypanthium late obconicum 1 mm. longum, calyce late campanulato 0.8 mm. longo truncato et remote denticulato; corolla extus glabra in alabastro apice rotundata 2.5 mm. longa, tubo late obconico in fauce dense albo-barbato, lobis 5 patentibus late ovato-triangularibus obtusis intus glabris; antherae exsertae oblongae 0.7 mm. longae obtusae; stylus inclusus.—Peru: San Ramón, Yurimaguas, Dept. Loreto, in forest, November 4, 1929, *Llewelyn Williams 4573* (herb. Field Mus. No. 623,451, type).

Similar in foliage characters as well as in the flowers to *Psychotria nudiceps* Standl., of the same general region, but in that the flower heads are not paniculate but rather on simple peduncles.

Psychotria plusiantha, sp. nov.—Ramuli crassi sparse minute adpresso-pilosuli vel fere glabri subteretes; stipulae persistentes erectae 7–8 mm. longae extus sparse minute adpresso-pilosulae ad medium bilobae, lobis oblongo-ovatis obtusis vel acutiusculis approximatis; folia breviter petiolata opposita majuscula crasse membranacea, petiolo 7–12 mm. longo crassiusculo puberulo vel glabrato; lamina late obovato-oblonga 16–21 cm. longa 6–7 cm. lata apice

abrupte cuspidato-acuminata, acumine angusto attenuato 1-1.5 cm. longo, basin versus longiuscule sensim attenuata, supra in sicco fusca, glabra vel tantum ad venas minute sparse puberula, costa venisque prominentibus, subtus fusco-purpurascens, ad venas sparse minutissime adpresso-pilosula vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere c. 14 gracillimis prominentibus angulo latiusculo adscendentibus obliquis arcuatis in marginem desinentibus, nervulo elongato parallelo inter paria nervorum interposito, nervulis transversis paucis obscuris laxissime reticulatis; inflorescentia terminalis capituliformis e cymis reductis densissime multifloris composita, 3 cm. longa et 5 cm. lata, pedunculo crasso 1.5 cm. longo erecto dense minute sericeo, floribus sessilibus, bracteis inferioribus brevibus oblongis, interioribus brevibus et inconspicuis; hypanthium obconicum glabrum 1.5-2 mm. longum; calyx glaber fere ad basin 5-fidus, laciniis late linearibus attenuatis suberectis crassis 8-10 mm. longis; corolla infundibuliformis in alabastro apice obtusa extus dense sordido-puberula, tubo gracili 14 mm. longo fauce subabrupte dilatato intus non barbato, lobis 5 anguste oblongis attenuatis obtusis patentibus intus minutissime puberulis; antherae breviter exsertae subrecurvae lineares 3 mm. longae; stylus inclusus.—Colombia: Provincias de Chocó y Barbacoas, alt. 100 meters, 1851-57, *J. Triana 1711* (herb. Paris, type); May, 1853, *Triana 3147(38)* (P).

The plant is a difficult one to place generically and when better material is obtained it may be necessary to remove it from *Psychotria*, perhaps to *Cephaelis*.

***Psychotria quindiensis*, sp. nov.**—Ramuli crassi glabri; stipulae persistentes in vaginam arcte adpressam glabram truncatam 7 mm. longam connatae, vagina in lobos 4 erectos lineari-attenuatos 1 cm. longos desinente; folia maxima petiolata opposita membranacea, petiolo 3 cm. longo glabro; lamina oblongo-elliptica c. 32 cm. longa et 13 cm. lata basi et apice acuta, supra in sicco viridescens, glabra, costa venisque prominulis, subtus paullo pallidior, sparse minutissime adpresso-pilosula, ad costam pilis paullo longioribus albidis pilosa, costa gracili elevata rubescente, nervis lateralibus utroque latere c. 18 gracillimis prominentibus angulo fere recto adscendentibus obliquis arcuatis juxta marginem conjunctis, nervulis prominentibus laxe reticulatis; inflorescentia terminalis erecta cymoso-paniculata c. 19 cm. longa et aequilata, pedunculo 7 cm. longo tetragono sparse puberulo vel glabrato, basi trichotoma, ramis basilaribus valde adscendentibus, superioribus compressis adscendentibus pallide sericeis basi bracteatis, floribus sessilibus in capitula pauciflora densa cymose disposita confertis, bracteis inferioribus oblongo-obovatis 1-1.5 cm. longis convolutis obtusis usque ad breviter acuminatis suberectis extus dense sericeis intus ferrugineis glabris, bracteis capitulorum c. 1 mm. longis aequilatis adpressis, intimis brevioribus; hypanthium obpyramidatum dense sericeum fere 2 mm. longum; calyx 5-partitus, laciniis 2 mm. longis anguste triangularibus

acutis vel acuminatis extus dense fulvo-sericeis erectis inaequalibus; corolla in alabastro apice obtusa extus densissime pilis fulvis villosopilosa 12 mm. longa, tubo supra paullo dilatato, lobis brevibus.—Colombia: La Trocha, Quindío, Prov. Cauca, alt. 2,300 meters, 1851-57, *J. Triana 1710* (herb. Paris, type).

This is one of the rather numerous plants which might be referred almost equally well to either *Psychotria* or *Cephaelis*. Among the Colombian *Psychotrias* it is noteworthy for its very large leaves and for the ample, openly branched inflorescence with capitate-congested flowers and exceptionally large, conspicuous, persistent bracts.

***Psychotria racemifera* Standl.** Field Mus. Bot. 8: 71. 1930.

The species was described from Venezuela. Apparently it has a wide range, as indicated by the following collections:

Peru: Timbuchi on the Río Nanay, Loreto, a shrub in forest, June, 1929, *Williams 952*.—Brazil: Manáos, July, 1900, *Ule 5121* (herb. Berol., herb. Kew.); a shrub 1 meter high or less; fruit blue. Jarú, Rio Branco, Amazonas, February, 1913, *Kuhlmann 2976* (B); vernacular name, "herva de rato." Faro, State of Pará, silva ad rivulum Maburiny, locis humidis, January, 1920, *Ducke 15353* (B); flowers white.

***Psychotria rigescens*, sp. nov.**—Suffrutex 50 cm. altus ramosus, ramis rigidis subteretibus, novellis minutissime puberulis, internodiis brevibus vel elongatis; vagina stipularis indurata 1.5-2 mm. longa, parte libera bilobata, lobis brevissimis obtusis; folia parva rigida subcoriacea breviter petiolata, petiolo glabro 2-3 mm. longo; lamina late elliptica vel rotundata-ovata 3.5-5.5 cm. longa 2-3.5 cm. lata subabrupte breviter obtuso-acuminata, basi obtusa vel saepius late rotundata et abrupte breviter contracta, glabra, in sicco olivaceo-viridis, supra sublucida costa venisque valde elevatis, subtus fere concolor opaca, costa gracili elevata, nervis lateralibus utroque latere c. 7 angulo lato adscendentibus valde arcuatis gracilibus prominentibus, nervulis prominentibus arcte reticulatis; inflorescentia terminalis parva erecta 10-14 mm. longe pedunculata e cymis 5 racemose dispositis parvis paucifloris composita c. 1 cm. longa et 2 cm. lata, pedunculo minutissime puberulo, cymarum pedunculis rigidis usque ad 6 mm. longis late divaricatis basi incrassatis ebracteatis, floribus arcte sessilibus, bracteis obsoletis; hypanthium late columnare 0.7 mm. longum minutissime puberulum, calyce vix 0.3 mm. longo obsolete denticulato; corolla alba in alabastro obovoidea puberula apice obtusa vel subrotundata 2.5-3 mm. longa, lobis tubo longioribus.—Brazil: Rio Trombetas, civ. Pará, locis altis circa cataractam Porteira in fruticetis "campina-rana" dictis, January 10, 1927, *A. Ducke 23062* (herb. Berol., type). Campina do Jufiry prope lacum Faro, civ. Pará, February 12, 1910, *A. Ducke 23031* (B).

The plant here described would have been referred by Mueller in the *Flora Brasiliensis* probably to *Psychotria cuspidata* Bredem., for it is closely similar to some of the forms of eastern Brazil that he placed with that species. However, it seems probable that most of the forms occurring south of the Amazon ultimately will have to be separated from the typical plant of the northern coast of South America. The present plant may be recognized by its small, broad, stiff, and prominently veined leaves.

Psychotria rondeletiioides Standl. Field Mus. Bot. 7: 110. 1930.

Based upon a specimen in the Kew herbarium collected by Funck and Schlim somewhere in Colombia. The following specimen, in the Paris herbarium, although its data are somewhat different, is probably of the same or type collection:

Colombia: San Pedro, Prov. Ocaña, 1,800 meters, May, 1846–52, L. Schlim 663; a shrub with white flowers.

Psychotria santae-rosae Standl. Field Mus. Bot. 7: 113. 1930.

Colombia: Prov. Barbacoas, 1851–57, J. Triana 1716 (herb. Paris).

Known previously only from the type specimen.

Psychotria santaremica Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 328. 1881.

This species may be reported as an addition to the known flora of Colombia: Quibdó, Río Atrato, Intendencia del Chocó, 60 meters, April–May, 1931, W. A. Archer 1909. A shrub 3 meters high; bracts of the inflorescence purple.

Psychotria Schottiana Muell. Arg. Flora 59: 547. 1876; in Mart. Fl. Bras. 6, pt. 5: 291. *pl.* 43, *f.* 1. 1881.

Brazil: Organ Mountains, Rio de Janeiro, Miers 4122 (herb. Kew.), 4107 (K).

Psychotria smaragdina, sp. nov.—Ramuli teretes in sicco fusci glabri; stipulae persistentes arcte vaginantes fere ad medium in lobos 2 lineares acutos bifidae glabrae; folia mediocria petiolata papyracea, petiolo gracili 1–2 cm. longo glabro; lamina elliptica vel oblongo-elliptica 9–16 cm. longa 4–7 cm. lata abrupte cuspidato-acuminata, acumine angusto attenuato 1–1.5 cm. longo, basi abrupte acuta et breviter decurrens, supra in sicco fusca glabra opaca costa prominula, subtus concolor sublucida sparse minute strigillosa, ad venas minute hispidula vel puberula serius glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 13 gracilibus elevatis angulo fere recto divergentibus arcuatis, nervulis prominulis; inflorescentia terminalis pyramidalis 4 cm. longe pedunculata circa 11 cm. longa et 6.5 cm. lata, simpliciter ramosa, ramis 4–5-jugis oppositis

subreflexis spiciformibus basi bracteis lanceolatis persistentibus ad 5 mm. longis fulcratis, hispidulis, floribus parvis aggregatis arcte sessilibus, bracteolis minutis, bracteis superioribus parvis ovatis; hypanthium minutum, calyce vix 1 mm. lato brevissime obtuse dentato glabrato; corolla viridi-alba 4 mm. longa extus sparse minutissime puberula vel fere glabra, lobis 4 oblongo-ovatis obtusis 1.2 mm. longis intus dense barbatis.—Colombia: Lower Chapón, Department of Boyaca, alt. 900 meters, edge of forest, August 8, 1932, *A. E. Lawrence* 405 (herb. N. Y. Bot. Gard., type; fragm. in herb. Field Mus.).

The collector states that the vernacular name is "esmeralda" (emerald), in allusion to the small, bright green, emerald-like immature fruits. He reports further that the plant is a tree 18–22 meters high, with a trunk 60–120 cm. in diameter, which probably is an error, since no species of *Psychotria* is known to attain half that size. Among the *Psychotrias* known from Colombia, this is marked by its open pyramidal inflorescence, with simple, spike-like, conspicuously reflexed branches.

***Psychotria stachyoides* Benth. Linnaea 23: 464. 1850.**

Although this species seems to be common and widely distributed in Brazil, Mueller listed only a few collections, and it is perhaps worth while to enumerate some of those examined recently by the writer:

Brazil: Without locality, *Pohl* 802 (herb. Kew.); *Burchell* 4661 (K), 2429 (K); *Sello* (K). São Paulo, Bosque da Saude, in thickets, December, 1911, *Brade* 5272 (herb. Stockholm); a shrub with whitish flowers. Prov. Minas Geraes, *Saint-Hilaire* (herb. Paris). Prov. Rio de Janeiro, *Miers* 4111 (K), 4112 (K). Jaguarahyva, in silvula, Paraná, 740 meters, *Dusen* 10703. Villa Velha, Paraná, *Jänssan* 1180a (S). Itaparussú, Paraná, 880 meters, *Dusen* 7092 (S). Theresopolis, Serra dos Orgaos, Prov. Rio de Janeiro, *J. T. de Moura* 278 (herb. Berol.). García, bei Blumenau, Santa Catharina, November, 1888, *E. Ule* 1046 (U. S. Nat. Herb.). Campinas *José de Campos Novaes* 711 (U. S. Nat. Herb.).

***Psychotria stenostachya* Standl. Field Mus. Bot. 8: 207. 1930.**

The plant seems to be plentiful in the lowlands of eastern Peru, numerous collections having been reported when the species was published. Brazilian specimens also have come to hand recently:

Brazil: Juruá Miry, Rio Juruá, October, 1901, *Ule* 5837 (herb. Kew.); distributed as *P. racemosa* Willd., which it does not resemble closely; a small shrub. Falls of the Madeira River, October, 1886, *Rusby* 1879 (K).

***Psychotria subremota* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 315. 1881.**

The type was collected "in Brasilia orientali tropica" by Sello. The type, in the Berlin herbarium, is represented in Field Museum by a photograph and fragment, which are well matched by the following localized collections:

Brazil: Dourado, Minas Geraes, May, 1846, *Widgren* (herb. Stockholm). Rio de Janeiro, *Widgren* (S).

Psychotria subspathacea Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 266. 1881.

Brazil: Itabapoana, Espirito Santo, December, 1887, *J. T. de Moura* 206 (herb. Berol.). Rio de Janeiro, prope urbem in silvis circa Hortum Botanicum, December, 1917, *Dionisio Constantino* 15446 (herb. Berol.).

Psychotria suerrensii Donn. Smith.—Described originally from Costa Rica, this species is frequent in the Atlantic lowlands of that country, growing in dense forest. It may be reported also for Nicaragua: Chontales, in forest, 600 meters, in 1870, *P. Lévy* 512 (herb. Paris). Braggman's Bluff region, April, 1928, *F. C. Englesing* 184.

Psychotria tenerior (Cham.) Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 331. 1811. *Patabea tenerior* Cham. Linnaea 9: 236. 1835.

Described from Brazil, the exact locality not known. The following collections agree well with a photograph and fragment of the type, from the Berlin herbarium:

Paraguay: Vallée de l'y Acanguazú près de Valenzuela, dans les bois, March 15, 1884, *Balansa* 4770 (herb. Kew.); a branched shrub 1 meter high.—Brazil: Rio Preto, Pernambuco, September, 1839, *Gardner* 2890 (K); a shrub 1 meter high.

Psychotria terminalis Vell. Fl. Flum. 65. 1825.

Brazil: "Environs de Rio Janeiro," *Glaziou* 12037 (herb. Kew.). Santa Catharina, *F. Mueller* 298 (K). Serra do Mar, Desvio Ypiranga, Paraná, in silva primaeva, 700 meters, February, 1914, *Dusén* 15044a. Jacarehy, Paraná, in silva primaeva, September, 1908, *Dusén* 6626. Serra do Mar, Porto de Cima, Paraná, 200 meters, March, 1914, *Dusén* 50a (herb. Stockholm). Ibupava, Paraná, 460 meters, June, 1909, *Dusén* 8214 (S). Morretes, Paraná, April, 1904, *Dusén* 4350 (S).

Psychotria Trianae, sp. nov.—Praeter inflorescentiam omnino glabra, ramulis gracillimis teretibus, internodiis valde elongatis; stipulae persistentes firmas erectae fere ad basin bifidae, laciniis anguste lineari-lanceolatis attenuatis venosis; folia mediocria sessilia opposita lanceolato-oblonga membranacea 12–14 cm. longa 3–4 cm. lata longissime et angustissime attenuata basi late rotundata et breviter cordata, supra in sicco fusca lucida, costa nervisque promi-

nulis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 15 tenerrimis prominulis angulo recto divergentibus arcuatis juxta marginem in nervum collectivum conjunctis, nervis 1-2 gracilioribus subparallelis inter paria interpositis, nervulis transversis subparallelis connexis; inflorescentia axillaris vel pseudosaxillaris ut videtur recurva cymoso-paniculata laxa multiflora graciliter 7-13 cm. longe pedunculata 5-8 cm. lata et fere aequilonga decussato-ramosa, ramis ut pedunculo minute hirtellis vel glabris, ramis saepe valde elongatis et secundifloris, floribus in fasciculos paucifloros aggregatis sessilibus, bracteis linearibus ad basin ramorum insertis linearibus patentibus usque ad 7 mm. longis; hypanthium glabrum 0.5 mm. longum, calyce profunde lobato 1.5 mm. longo, laciniis lanceolato-oblongis acutis vel acuminatis erectis glabris; corolla extus glabra in alabastro 4 mm. longa apice obtusa, tubo gracili supra dilatato; drupae depresso-globosae subdidymae 3.5 mm. latae glabrae calyce persistente coronatae, pyrenis dorso acute costatis.—Colombia: Provincia de Barbacoas, May, 1853, *J. Triana* (herb. Paris, type).

The plant is a unique one, clearly a *Psychotria*, but not readily associable with any other species that I have seen. Its general appearance would suggest an association with *P. patens* Sw. The narrow, sessile and more or less cordate, extremely attenuate-acuminate leaves are distinctive.

Psychotria trivialis Rusby, Mem. Torrey Club 6: 50. 1896.

Hitherto this species has been known only from Bolivia, where it appears to be not uncommon. Recent collections show that it is a member also of the Peruvian flora, the following specimens being at hand:

Peru: Puerto Arturo, Yurimaguas, 155-210 meters, a small shrub in forest, November, 1929, *Williams* 5292. Fortaleza, Yurimaguas, 155-210 meters, a small shrub at edge of forest, October, 1929, *Williams* 4283.

Psychotria Ulei, sp. nov.—Omnino glabra, ramulis gracilibus subcompressis fusco-olivaceis, internodiis foliis brevioribus; stipulae persistentes erectae basi vix 1 mm. longe connatae, vagina in lobos 4 setiformes 1.5-2 mm. longos deciduos desinente; folia mediocria petiolata opposita firme membranacea, petiolo gracili 10-16 mm. longo; lamina late elliptica vel rarius oblongo-elliptica 5.5-11 cm. longa 2.5-6.5 cm. lata abrupte acuta vel breviacuminata, acumine triangulari obtuso, basi acuta vel interdum obtusa et abrupte breviter decurrens, supra in sicco cinereo-viridis vel lutescens, costa venisque valde elevatis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 12 prominentibus approximatis aequalibus angulo fere recto abeuntibus valde arcuatis prope marginem pallidum paullo incrassatum conjunctis, nervulis prominulis laxa reticulatis; inflorescentia terminalis sessilis capitato-ternata, pedun-

culis crassis valde compressis 2–3.5 cm. longis erectis vel adscendentibus, floribus ad apices pedunculorum dense subcapitato-confertis numerosis sessilibus vel breviter crasse pedicellatis, bracteis persistentibus ad basin ramorum insertis anguste triangularibus acuminatis 3–4 mm. longis, bracteis florum conformibus c. 2 mm. longis; hypanthium late obovoideum 1.5 mm. longum; calyx anguste cylindrico-infundibuliformis in alabastro clausus et apice saepe apiculatus 10–14 mm. longus et supra usque ad 6 mm. latus ut videtur purpurascens obscure striato-nervius brevissime lobatus, lobis apice rotundatis vel obtusissimis erectis; corolla glabra calyce inclusa et eo vix longior, tubo crassiusculo supra paullo dilatato, lobis 5 triangulari-oblongis crassis obtusis erectis 2–2.5 mm. longis; antherae inclusae; bacca immatura globosa 6 mm. longa basi et apice rotundata.—Brazil: Rocky cliffs, Serra do Macahé, Estado de Rio de Janeiro, alt. 1,300 meters, February, 1900, *E. Ule* 4913 (herb. Berol., type).

Closely related to *Psychotria stenocalyx* Muell. Arg., according to the description of that species, of which I have seen no material. *P. stenocalyx* is described as having a calyx as much as 2 cm. long.

Psychotria vittoriensis Muell. Arg. Flora 59: 548. 1876.

Brazil: Prov. Espirito Santo, 1816–21, *Saint-Hilaire B.335* (herb. Paris). Engenheiro Reeve, Espirito Santo, 500 meters, 1903, *A. Robert* (herb. Kew.).

The species of *Psychotria* of Mueller's group *Fissistipulae* could perhaps be placed more satisfactorily or at least more conveniently in *Rudgea*. The two genera can be separated certainly only with mature fruit, which seldom is present on the specimens. *Rudgea* can be recognized most surely by the form of the stipules. The stipules in this group of *Psychotria* are so much like those of many *Rudgea* species that one is almost certain to refer the species of the *Fissistipulae* to *Rudgea*, unless thoroughly familiar with all the *Psychotria* species.

Psychotria Wilkesiana Standl. Field Mus. Bot. 8: 214. 1930.

Brazil: Without locality, *Sello 119* (herb. Kew.). Organ Mountains, Rio de Janeiro, *John Miers 4117* (K).

Psychotria xanthocephala Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 351. pl. 53, f. 1. 1881.

Brazil: Santa Anna da Chapada, Matto Grosso, in silva sat clara, August, 1902, *Malme 2203* (herb. Stockholm); a shrub scarcely 1.7 meters high. Goyaz, *Glaziou 21550* (S). Central Brazil, in 1844, *Weddell 1976* (herb. Paris).

Psychotria xanthophylloides (Muell. Arg.), comb. nov. *Mapouria xanthophylloides* Muell. Arg. Flora 59: 496. 1876.

Randia calycosa Standl. Contr. U. S. Nat. Herb. 20: 201. 1919.

Unlike most members of the genus, *Randia calycosa* is a plant of the high mountain forests. It was described originally from the Cerro de Horqueta, Chiriquí, Panama, at 1,700 meters and it may be reported now from one of the most famous collecting grounds in Costa Rica, whose flora seems to be altogether inexhaustible:

Costa Rica: In pastures at La Palma, a small tree, August, 1898, A. Tonduz 12481 (herb. Berol.).

Randia Killipii Standl. Field Mus. Bot. 8: 170. 1930.

A well-marked species, known heretofore from several collections obtained in Loreto and Junín, Peru. It may be reported now as a member of the Colombian flora: Colombia: Río Putumayo, on the Peruvian boundary, in forest, Klug 1608.

A tree 3 meters high; flowers white. The corolla tube may be as much as 4 cm. long, and the lobes of equal length, measurements slightly greater than in Peruvian specimens. The young branchlets are hispid, also, the pubescence being less dense than in the original material.

Randia laetevirens Standl. Contr. U. S. Nat. Herb. 23: 1377. 1926.

A new local name appears upon the label of a collection examined recently: Mexico: Fortín, Veracruz, March, 1883, E. Kerber 392 (herb. Leningrad). Vernacular name, "coronillo."

Richardia humistrata (Cham. & Schlecht.) Steud. Nom. Bot. ed. 2. 2: 459. 1840. *Richardsonia humistrata* Cham. & Schlecht. Linnaea 3: 353. 1828; Schum. in Mart. Fl. Bras. 6, pt. 6: 97. pl. 88, f. 2. 1888.

In plate 88 of the *Flora Brasiliensis* there are illustrated two plants, *Richardsonia humistrata* and *Schwendenera tetrapyxis*. Schumann's citations of the two figures under the descriptions of the species illustrated, as well as the text of the plate, are incorrect. Figure 1, which he cites for *Richardsonia humistrata* is really *Schwendenera*, and figure 2, which he cites under *Schwendenera*, is really *Richardsonia humistrata*. This typographical error has led to confusion in determination. Reineck & Czermak 76 listed below was distributed as *Schwendenera*, and it is the *Schwendenera* of the plate, although casual reading of the description of that genus would have shown that the specimens could not possibly be referred there. Of *Richardia humistrata* the following collections have been seen by the writer:

Brazil: Rio Grande do Sul, *Reineck & Czermak* 76 (herb. Stockholm). Porto Alegre, Navegantes, December, 1901, *Malme* 304a (S). Rio Grande, in arenosis sat siccis, October, 1901, *Malme* 20 (S). Quinta near Rio Grande, in campo arenoso subhumido, November, 1901, *Malme* 304 (S).—Uruguay: near Montevideo, *Sello* d10 (fragm. ex herb. Berol.).—Peru: Cutervo, Cajamarca, *Raimondi* 5689 (fragm. ex herb. Berol.).

The species is reported also from the State of Santa Catharina, Brazil.

***Rondeletia intermedia* Hemsl. Diag. Pl. Nov. 26. 1879.**

The species was based upon *Linden* 1659 and 1661 from Chiapas. I have seen in the Delessert Herbarium a specimen of *Linden* 1661, collected at Pueblo Nuevo, Chiapas (Hemsley does not give the locality), in February, 1840. In the same herbarium there is another specimen obtained by the same collector, without number, in pine forests of Chiapas in the same month.

Hemsley cites with the original description also *Jurgensen* 798 from Oaxaca, but the specimen of this number in the Delessert Herbarium is clearly *Rondeletia amoena* (Planch.) Hemsl., and does not agree with Hemsley's description. Perhaps two species have been distributed under the same number. Linden describes the corollas of *R. intermedia* as red ("rouges").

***Rondeletia Galeottii* Standl. N. Amer. Fl. 32: 59. 1918.**

Mexico: Sulusuchiapa, Chiapas, 800 meters, April, 1840, *J. Linden* 333 (herb. Deless.). Flowers white.

***Rondeletia oaxacana*, sp. nov.**—Ramuli graciles teretes dense ferrugineo-tomentosi, internodiis elongatis; stipulae erectae persistentes c. 6 mm. longae e basi triangulari subulato-attenuatae tomentosae; folia mediocria sessilia vel vix 2 mm. longe petiolata subcoriacea ovato-ovalia vel elliptico-ovalia 4.5–9.5 cm. longa 3–5 cm. lata acuta vel abrupte breviter acuta basi late rotundata et breviter vel profunde cordata plus minusve rugosa vel bullata supra in sicco fusca puberula vel breviter pilosa asperula costa venisque subimpressis, subtus pallidior vel incana dense tomento albedo arachnoideo-tomentosa costa gracili elevata, nervis lateralibus utroque latere circa 8 angulo latiusculo adscendentibus arcuatis prominentibus marginem fere attingentibus, venulis prominentibus arcte reticulatis; inflorescentia terminalis anguste cymoso-paniculata dense multiflora erecta 5.5 cm. longe pedunculata 12 cm. longa et basi 5 cm. lata, decussata, ramis primariis brevibus arcuatim adscendentibus vel subdivaricatis dense ferrugineo-tomentosis, bracteis lineari-lanceolatis usque ad 6 mm. longis tomentulosis, ramis primariis cyma capituliformi terminatis, cymis densissime multifloris, floribus sessilibus; hypanthium ut calyx dense ferrugineo-tomentosum, calycis laciniis 4 subaequalibus ovali-oblongis obtusis 2.5 mm.

longis intus glabris; corolla alba extus dense pilis crassiusculis subpatentibus ferrugineis vel fulvis hispidula, tubo gracili tereti 1 cm. longo supra vix dilatato, lobis intus glabris rotundatis 4–5 mm. longis patentibus.—Mexico: Oaxaca, October, *H. Galeotti 2664 bis* (herb. Paris, type).

A well-marked species of the group *Laniflorae*, noteworthy for the sessile leaves with cordate bases.

Rondeletia parviflora Poir. in Lam. Encycl. 6: 252. 1804. *R. arborescens* Griseb. Fl. Brit. W. Ind. 327. 1861.

The type of *R. parviflora*, which was listed by the present writer in the *North American Flora* (32: 86. 1918) as a doubtful species, was collected in Martinique by Richard. In the Delessert Herbarium there is a specimen from the Ventenat Herbarium, which is labeled as *Rondeletia parviflora*, with the statement that it was collected in the Antilles by Richard. It is, therefore, presumably authentic material of that species. The specimen agrees perfectly with the following collections, which have been referred by the writer and others to *R. arborescens*.

Martinique: *Duss 942*. Forêt de l'Alma, *Hahn 639* (herb. Paris).—Guadeloupe: *Duss* (herb. Paris); *Duss 2552*.

Rondeletia pubescens HBK. Nov. Gen. & Sp. 3: 396. *pl. 291*. 1820. *R. brevipes* Benth. Pl. Hartw. 191. 1845.

In the *Rubiaceae of Colombia* (Field Mus. Bot. 7: 28. 1930) *Rondeletia brevipes* was listed as a valid species, but with some question regarding its proper status. Recently I have been able to examine a specimen of *Hartweg 1050*, the type collection of *R. brevipes*, in the Delessert Herbarium. There seems to be no reason why Bentham's name should not be referred to synonymy under *Rondeletia pubescens*.

Rondeletia subcordata, sp. nov.—Ramuli gracillimi teretes, vetustiores brunnescentes rimosi, novelli puberuli, internodiis foliis fere aequilongis vel interdum longioribus; stipulae triangulares acutae 1–1.5 mm. longae; folia opposita fere sessilia coriacea parva, petiolo 1 mm. tantum longo; lamina oblongo-ovata 10–22 mm. longa 5–10 mm. lata acuta vel subacuminata basi rotundata vel leviter cordata, supra glabra, subtus fere concolor glabra vel tantum ad costam elevatam sparse hispidula, nervis lateralibus utroque latere 4–5 inconspicuis; inflorescentiae terminales longipedunculatae umbellatim triflorae vel interdum ramosae et pluriflorae, bracteis basalibus linearibus vel lanceolatis usque ad 4 mm. longis, bracteolis subulatis 1–2 mm. longis, pedicellis 2–4 mm. longis gracilibus rectis; hypanthium subglobosum 1.5 mm. longum dense albedo-tomentosum; calycis laciniae 4 anguste subulatae 3–4 mm. longae erectae pilosulae; corollae tubus gracillimus 6–7 mm. longus supra non dilatatus dense

pilis minutis reflexis sericeo-pilosulus, lobis 4 rotundatis patentibus intus glabris 1.5 mm. longis.—Dominican Republic (?): "St. Domingue," in 1851, *M. Varanne* (herb. Paris, type).

This plant agrees better with the description of the Haitian *Rondeletia domatiata* Urban than with any other species of which I have seen specimens or descriptions. That species has domatia on the lower surface of the leaves, and this has none. In *R. domatiata* the leaves are described as being merely obtuse at the base.

Rudgea alibertioides, sp. nov.—Ut videtur frutex dense ramosus, ramulis subteretibus vel ad nodos subcompressis rigidis in sicco subolivaceis densissime minute puberulis, internodiis foliis brevioribus; stipulae persistentes rotundatae 1.5-2 mm. longae puberulae mucronatae, mucrone setulis paucis pallidis usque ad 3 mm. longis marginalibus dorsalibusque onusto; folia parva subcoriacea opposita in sicco olivacea vix 2 mm. longe petiolata oblanceolato-oblonga 3.5-5 cm. longa 1-1.7 cm. lata obtusa vel acuta basin versus sensim angustata basi ipsa acuta, supra lucida glabra costa nervisque prominulis, subtus opaca paullo pallidiora, ubique minutissime puberula, costa gracili prominente, nervis lateralibus utroque latere c. 11 prominulis angulo acuto adscendentibus prope marginem junctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis 1.5 cm. longe pedunculata umbellatim trichotoma, ramis 8-10 mm. longis sparse minutissime puberulis, floribus paucis capitatis arcte sessilibus bracteis hypanthio brevioribus laciniatis; hypanthium glabrum 1.5 mm. longum obconicum, calyce hypanthio paullo brevior fere ad basin 4-lobo, laciniis triangulari-ovatis obtusis vel acutiusculis; corolla extus glabra gracilis, tubo 10-12 mm. longo fauce abrupte paullo dilatato, lobis 4 subpatentibus ovato-oblongis 3-4 mm. longis obtusis; stylus filiformis 6 mm. longe exsertus.—Brazil: Without locality, *A. Glaziov 14902* (Copenhagen herbarium, type).

The collection was distributed as *Psychotria parvifolia* Muell. Arg., but the plant is clearly a species of *Rudgea*. It is related most closely to *R. celastrinea* Muell. Arg., which is glabrous throughout, and differs in several minor details.

Rudgea allophylla, sp. nov.—Ut videtur dense ramosa, ramulis vetustioribus teretibus gracilibus pallidis, novellis gracillimis minutissime puberulis, internodiis plerumque abbreviatis; stipulae persistentes in vaginam vix 1 mm. longam connatae, parte apicali 1-1.5 mm. longa in setas paucas breves deciduas divisa; folia brevissime petiolata tenuiter membranacea opposita, petiolo 1-2 mm. longo minutissime puberulo; lamina valde variabilis lanceolato-oblonga usque ad oblongo-ovata vel rotundato-ovata, 3-6.5 cm. longa, 1-4.5 cm. lata, acuta vel acuminata, basi subobtusa usque ad subcordata, supra in sicco fusco-viridis, glabra vel tantum ad venas obscure sparse puberula, venis non elevatis, subtus pallidior, ad costam

gracilem praesertim in axillis pilis longis pallidis laxis pilosa, aliter glabra, nervis lateralibus utroque latere c. 6 obliquis angulo semirecto adscendentibus gracillimis vix prominulis leviter arcuatis prope marginem conjunctis, nervulis non elevatis obscuris laxe reticulatis; inflorescentia terminalis graciliter 1.5–2 cm. longe pedunculata cymoso-corymbosa laxa multiflora 1.5–4 cm. longa et aequilata, basi trichotoma, ramis gracillimis minute puberulis, ultimis plerumque trifloris, bracteis obsoletis, flore terminali cymulae sessili, lateralibus pedicellis gracilibus puberulis usque ad 6 mm. longis stipatis; hypanthium anguste columnare minutissime puberulum 1.5 mm. longum; calyx 5-partitus, laciniis minute puberulis vel fere glabris lineari-attenuatis 2–3 mm. longis viridibus patentibus; corolla extus minute pilosula vel puberula in alabastro apice non cornuta, in anthesi 10–12 mm. longa, tubo gracili supra paullo dilatato in fauce piloso, lobis 5 lineari-lanceolatis patentibus obtusis tubo paullo longioribus; flores heterostyli, interdum stylo brevi et staminibus exsertis, interdum stylo longe exserto et staminibus inclusis.—Brazil: “Environs de Rio de Janeiro,” *A. Glaziou 12771* (herb. Kew., type).

In Mueller's key to the species of *Rudgea* in the *Flora Brasiliensis*, the present plant resembles *R. eriantha* Benth. (properly *R. coriacea* Schum.), but the two plants are not closely related. *Rudgea allophylla* is noteworthy for its variable leaves, lax inflorescences, elongate calyx segments, and pubescent corollas.

***Rudgea amplicalyx*, sp. nov.**—Frutex omnino glaber ramosus, ramulis teretibus gracilibus, vetustioribus albidis rimosis, novellis viridibus striatis, internodiis foliis plus quam duplo brevioribus; stipulae albiae primo connatae, late ovales vel rotundatae apice rotundatae dorso prope apicem setis paucis brevibus rigidis onustae; folia mediocria breviter petiolata firme membranacea, petiolo crassiusculo 2–5 mm. longo; lamina elliptica 7–10 cm. longa 2.5–4.5 cm. lata abrupte acuminata, acumine anguste triangulari 1–2 cm. longo attenuato anguste obtuso, basi cuneato-acuta, supra in sicco cinereo-viridescens costa venisque non elevatis, subtus pallide lutescens, costa gracili elevata, nervis lateralibus utroque latere c. 9 obliquis angulo acuto adscendentibus gracillimis prominentibus vix arcuatis remote a margine conjunctis, venulis prominulis arcte reticulatis; inflorescentia terminalis sessilis vel ad 8 mm. longe pedunculata, cymoso-corymbosa laxa multiflora 4–5 cm. longa et aequilata vel paullo latior, basi trichotoma, ramis quoque trichotomis, ramulis cymula triflora terminatis, bracteis minutis subulatis, pedicellis gracilibus 5–8 mm. longis; hypanthium clavatum 1.5 mm. longum; calyx 3–6 mm. longus campanulatus ut videtur coloratus fere ad medium lobatus, laciniis oblongo-lanceolatis acuminatis erectis; corolla extus glabra, tubo crasso 6 mm. longo fauce dense villosa, lobis aequilongis lineari-oblongis patentibus vel reflexis intus minute puberulis; stylus filiformis longe exsertus.—Brazil: Prov. Espiritu Santo, 1816–21, *Auguste de Saint-Hilaire 332* (herb. Paris, type).

Although decidedly ordinary in general appearance, the plant is unusual in the large and well-developed calyx, which is almost corolloid in appearance.

Rudgea angustissima, sp. nov.—Frutex 3–3.5 m. altus, ramis gracilibus rigidis subteretibus et plus minusve striatis, novellis minute pilis patentibus pilosis; stipulae 5–6 mm. longae profunde in lacinias subulatas paucas lobatae pilosulae persistentes; folia breviter petiolata firme membranacea, petiolo gracili 4–5 mm. longo pilosulo; lamina lineari-oblonga vel angustissime lanceolata 9–11 cm. longa 15–18 mm. lata apicem versus longe attenuata basi acuta vel basin versus sensim attenuata supra in sicco opaca fusco-viridis vel luteo-viridis glabra, subtus sparse vel ad costam densius minute puberula, costa gracili elevata, nervis lateralibus utroque latere c. 9 prominulis angulo semirecto adscendentibus, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis parva cymosopaniculata 1.5 cm. longe pedunculata c. 1 cm. longa et fere aequilata, ramis crassis brevibus dense hirtellis, bracteis minutis obscuris, floribus paucis aggregatis sessilibus; hypanthium crassum fere 1 mm. longum glabratum, calyce brevissimo obscure remote repandodenticulato; corolla in alabastro vix evoluta extus glabra; cetera ignota.—Peru: Puerto Bermúdez, Dept. Junín, 375 meters, in dense forest, July, 1929, *E. P. Killip & A. C. Smith 26459* (herb. Field Mus. No. 632,756, type).

The species is unusual in its extremely narrow leaves.

Rudgea bogotensis, sp. nov.—Glabra, ramulis gracilibus teretibus, vetustioribus ochraceis rimosis, novellis fuscis, internodiis brevibus; stipulae persistentes late oblongae vel ellipticae breviter connatae crassae erectae obtusae subcostatae, margine prope apicem setulis paucis 1–1.5 mm. longis valde incrassatis obtusiusculis onusto; folia mediocria breviter petiolata opposita crasse membranacea, petiolo gracili 4–7 mm. longo; lamina elliptico-oblonga vel oblanceolato-oblonga 11–14 cm. longa 3.5–6 cm. lata abrupte longiacuminata, acumine angusto longe attenuato, basin versus longe angustata, supra in sicco fusco-viridis, sublucida, costa venisque vix elevatis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9 gracilibus prominentibus obliquis angulo semirecto adscendentibus subarcuatis vel fere rectis prope marginem conjunctis vel interdum in marginem desinentibus, nervulis prominulis arcte reticulatis; inflorescentia terminalis graciliter pedunculata cymosocorymbosa 3 cm. longa laxa pauciflora, ramis gracilibus valde adscendentibus vel suberectis, bracteis minutis vel obsoletis, floribus in cymulas trifloras dispositis, flore terminali arcte sessili, lateralibus 3–4 mm. longe pedicellatis; hypanthium obovoideum 0.8 mm. longo, calyce latissime campanulato 1–1.5 mm. longo truncato 1.6 mm. lato; corolla ante anthesin 8 mm. longa apice rotundata ecornuta, tubo supra paullo dilatato, lobis oblongis obtusis tubo subaequilongis.—Colombia: Tunca, Prov. Bogotá, alt. 1,400 meters, 1851–57, *J. Triana 1721* (herb. Paris, type).

Although it has no special distinguishing characters, the plant is altogether distinct from the *Rudgeas* reported previously from Colombia.

Rudgea calophylla, sp. nov.—Arbuscula 2-metralis dichotome ramosa floribus exceptis omnino glabra, ramulis gracilibus rigidis teretibus vel subcompressis olivaceis, internodiis elongatis; stipulae 2-3 mm. longae incrassatae late ovatae persistentes acutiusculae dorso prope apicem setis paucis brevibus pallidis crassis congestis onustae; folia sessilia vel crasse 1-2 mm. longe petiolata opposita tenuiter coriacea; lamina oblongo-lanceolata 8-14 cm. longa 2-5.5 cm. lata longissime attenuato-acuminata versus basin paullo breviter angustata, basi ipsa rotundata vel interdum subcordata, supra in sicco luteo-viridis, sublubida, costa valde elevata, venis prominentibus, nervulis prominulis, subtus paullo pallidior, costa gracili valde elevata, nervis lateralibus utroque latere c. 11 obliquis angulo semirecto adscendentibus elevatis gracilibus subcurvis juxta marginem conjunctis, nervulis prominentibus arcte reticulatis; inflorescentia terminalis sessilis vel crasse 5 mm. longe pedunculata capituliformi-contracta dense pauci- vel multiflora 8-14 mm. lata, floribus confertis sessilibus, bracteis late triangularibus c. 0.6 mm. longis acutis persistentibus; hypanthium late obconicum 1 mm. longum glabrum vel obsolete puberulum, calyce 1.2 mm. longo late campanulato subtruncato vel obsolete undulato-dentato minutissime puberulo vel glabrato; corolla in alabastro ut videtur valde immatura 3-3.5 mm. longa apice late rotundata ecornuta extus dense minute pulverulaceo-puberula eburnea.—Brazil: Ad ripas fluminis Uaupes, prope Panure, December, 1852, *R. Spruce 2711* (herb. Kew., type).

A species of doubtful affinity, noteworthy for its sessile, narrow, unusually long-acuminate leaves, and for the small, dense, headlike, few-flowered inflorescence.

Rudgea cornifolia (H. & B.) Standl. Field Mus. Bot. 7: 432. 1931. *Psychotria cornifolia* H. & B. apud R. & S. Syst. 5: 191. 1819. *P. fimbriata* Benth. in Hook. Journ. Bot. 3: 226. 1841. *R. fimbriata* Standl. in Standl. & Cald. Lista Pl. Salv. 274. 1920. *P. articulicymosa* Wernham, Journ. Bot. 55: 253. 1917.

In the *Rubiaceae* of Colombia, *Psychotria articulicymosa* was listed as a valid species. I find, however, that the type collection, *Triana 1692*, was listed quite properly under *Rudgea fimbriata*, i.e. *R. cornifolia*, of which Wernham's *Psychotria* is clearly a synonym. The following additional collection of the species may be placed on record: Colombia: Fusagasugá to Pandi, *Goudot 3* (herb. Paris).

Rudgea cryptantha, sp. nov.—Frutex omnino glaber, ramulis gracilibus rectis vel flexuosis teretibus viridibus, internodiis elongatis

vel abbreviatis; stipulae persistentes erectae late obovatae 12-14 mm. longae virides vel pallide olivaceae apice lato breviter laciniato-dentatae, laciniis numerosis 1-2 mm. longis pallide setoso-apiculatis; folia mediocria breviter petiolata opposita membranacea, petiolo 2-5 mm. longo supra sulcato; lamina anguste lanceolato-oblonga 8-12.5 cm. longa 2-3.5 cm. lata longissime attenuato-acuminata, acumine angustissimo saepe subfalcato, basi acuta vel obtusa, supra in sicco cinereo-viridis, costa prominente, venis prominulis, subtus fere concolor, in axillis venarum excavata, costa gracili elevata, nervis lateralibus utroque latere c. 7 obliquis gracilibus prominentibus angulo semirecto adscendentibus subcurvis prope marginem conjunctis, nervulis prominulis arcte reticulatis; flores terminales sessiles fasciculati pauci stipulis 2 magnis involucrati; hypanthium obovoideum 1 mm. longum, calyce campanulato 2.5 mm. longo pallido obsolete undulato-dentato; corolla in alabastro apice obtusa ecornuta, tubo crasso 12 mm. longo 2 mm. lato supra vix dilatato, lobis 5 oblongis apiculatis 5-6 mm. longis patentibus intus glabris; antherae inclusae; stylus dense puberulus 4 mm. longe exsertus.—Peru: San Antonio, Alto Río Itaya, Dept. Loreto, alt. 145 meters, October 9, 1929, *Llewelyn Williams 3521* (herb. Field Mus. No. 621,600, type).

The plant is unique in its sessile involucrate flowers, and the large, laciniate-dentate stipules also are distinctive.

Rudgea Duckei, sp. nov.—Arbor parva omnino glabra, ramulis sat gracilibus rigidis teretibus fuscis; stipulae breviter connatae 3-4 mm. longae triangulari-rotundatae obtusae apice breviter productae et setis paucis brevibus deciduis incrassatis onustae; folia breviter petiolata opposita subcoriacea, petiolo crassiusculo 6-9 mm. longo; lamina anguste oblonga 11.5-18 cm. longa 3-5 cm. lata, longe anguste attenuato-acuminata, basi acuta, supra in sicco fusco-viridis vel subflavescens, sublucida, costa subimpressa, venis manifestis sed non elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 8 gracilibus prominulis obliquis angulo latiusculo adscendentibus inaequalibus ante marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis cymoso-corymbosa crasse 8 mm. longe pedunculata, corollis neglectis 2.5 cm. longa et 4 cm. lata, dense multiflora, ramis infimis verticillatis adscendentibus dichotomis, floribus sessilibus ad apices ramorum dense congestis, bracteis persistentibus triangulari-acuminatis vix 1 mm. longis basi saepe bidentatis; hypanthium obconicum 1 mm. longum, calyce fere 1 mm. longo 5-partito, laciniis oblongis obtusis minute ciliolatis; corolla alba in alabastro obtusa ecornuta, tubo gracillimo 3.5 cm. longo fere 2 mm. lato supra non dilatato fauce glabro, lobis 5 anguste oblongis attenuato-obtusis 5 mm. longis intus glabris patentibus; stylus capillaris glaber; bacca ovalis 8-13 mm. longa basi et apice rotundata.—Brazil: In silvis non inundatis prope fluminem Aramá, in regione Breves aestuarii amazonici, State of Pará, November 29, 1922, *A. Ducke 18831* (herb. Berol., type).

In corolla size and form the plant suggests *Rudgea graciliflora* Standl., of the same region, but the latter has longer flowers, small, thin leaves, and a greatly reduced inflorescence, besides differing in calyx structure.

***Rudgea fascigera*, sp. nov.**—Ramuli vetustiores subteretes ochracei plus minusve striati, novellis dense pilis adscendentibus brunnescentibus hispidopilosis, internodiis abbreviatis vel elongatis; stipulae in vaginam 1.5–2 mm. longam hispidulam induratum connatae, vagina inter folia fasciculis 2 setarum paucarum rigidarum 5 mm. longarum erectarum onusta; folia breviter petiolata membranacea opposita, petiolo gracili 3–8 mm. longo hispidulo; lamina oblanceolato-oblonga vel anguste elliptico-oblonga, saepius paullo supra medium latissima, abrupte acuta vel acuminata, acumine triangulari vel anguste triangulari et longe attenuato, basi acuta vel basin versus longius angustata, supra in sicco fusco-viridis, glabra, costa venisque non vel vix elevatis, subtus fere concolor, saepe brunnescens, ad venas laxè breviter villosula, aliter obscure puberula vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 9 obliquis angulo semirecto adscendentibus gracilibus prominentibus leviter curvis marginem attingentibus nervulis vix prominulis numerosissimis fere rectis et horizontalibus crebre parallelis; inflorescentia terminalis 1.5–2 cm. longe pedunculata erecta anguste thyrsoido-paniculata dense multiflora 1.5–4 cm. longa 1–2.5 cm. lata ramis verticillatis vel alternis patentibus crassiusculis dense brunneo-pilosulis, floribus ad apices ramorum dense congestis sessilibus vel rarius in cymulas laxiusculas dispositis, bracteis persistentibus lineari-subulatis patentibus vel subreflexis dense sordido-puberulis plerumque 2–3 mm. longis; hypanthium puberulum 0.5 mm. longum, calyce 5-partito, vix 0.3 mm. longo, lobis minutis ovato-triangularibus obtusis; corolla minute puberula 4 mm. longa in alabastro apice 5-corniculata, appendicibus gracilibus radiatim patentibus, tubo in fauce non barbato, lobis oblongis patentibus obtusis tubo triplo brevioribus; antherae breviter exsertae lineares 1.2 mm. longae erectae.—Brazil: Province de Espírito Santo, 1816–21, *Auguste de Saint-Hilaire B.335* (herb. Paris, type). Engenheiro Reeve, Espírito Santo, 500 meters, in 1903, *A. Robert* (herb. Kew.).

The relationship of this well-marked species is not clearly apparent. The plant is noteworthy for the form of the stipules, the abundant pubescence, and the narrow, thyrsoid inflorescence with minute flowers.

***Rudgea Glaziovii* Muell. Arg.** in Mart. Fl. Bras. 6, pt. 5: 217. 1881.

Brazil: Prov. Rio de Janeiro, 1816–21, *Saint-Hilaire C.4* (herb. Paris).

***Rudgea graciliflora*, sp. nov.**—Frutex parvus, ramulis gracilibus teretibus, vetustioribus ochraceis, novellis fusco-olivaceis minu-

tissime puberulis, internodiis brevibus; stipulae 2–2.5 mm. longae persistentes erectae e basi rotundata breviter mucronatae et apice dense brevissime setulosae, setis pallidis deciduis; folia breviter petiolata parva opposita membranacea, petiolo gracili 4–6 mm. longo minutissime puberulo vel fere glabro; lamina oblonga 5.5–9 cm. longa 2–2.5 cm. lata subabrupte longe caudato-acuminata, acumine angusto usque ad 1.5 cm. longo acuto vel obtuso attenuato, basi acuta, glabra, supra fusco-viridis, costa venisque non elevatis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 6 tenerrimis prominentibus inaequalibus angulo semirecto adscendentibus obliquis fere rectis remote a margine conjunctis, nervulis prominulis subarcte reticulatis; inflorescentia terminalis crasse 2.5 mm. longe pedunculata capituliformi-contracta dense pauciflora corollis neglectis 6 mm. longa, floribus simpliciter racemose dispositis, pedicellis crassis usque ad 3 mm. longis minute puberulis, bracteis obsoletis; hypanthium fere microscopice puberulum 1 mm. longum, calyce vix 0.5 mm. longo obscure latissime denticulato; corolla alba in alabastro apice obtusa ecornuta extus glabra vel sparse et minutissime puberula, tubo gracillimo 4.8 cm. longo 1.5 mm. lato supra non dilatato fauce non barbato, lobis oblongis attenuato-obtusis intus glabris patentibus 4 mm. longis; filamenta 4–5 mm. longe exserta, antheris lineari-oblongis fere 2 mm. longis.—Brazil: In silvis non inundatis prope flumen Macujirbim, regione Breves aestuarii amazonici, State of Pará, January 17, 1920, *A. Ducke 15358* (herb. Berol., type).

A striking plant because of the exceptionally long and slender corollas.

Rudgea justicioides Standl. Field Mus. Bot. 8: 229. 1930.

The species was based upon material from the Department of Loreto in eastern Peru. The following Brazilian collection has come to hand recently: Brazil: São Braz, Rio Purus, in forest, September, 1874, *J. W. H. Traill 432* (herb. Kew.); flowers white.

Rudgea Langsdorffii Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 191. 1881.

Brazil: Piassaguera, São Paulo, September, 1902, *A. Puttemans 11884* (herb. Berol.); a tree; flowers white. Corcovado, Rio de Janeiro, *Miers 3905* (herb. Kew.).

Rudgea longipes, sp. nov.—Praeter inflorescentiam omnino glabra, ramulis teretibus gracilibus, vetustioribus brunnescentibus, novellis olivaceis, internodiis elongatis; stipulae in vaginam erectam 2–3 mm. longam connatae, vagina subtruncata prope basin fasciculo denso setarum brevium incrassatarum onusta; folia breviter petiolata subcoriacea opposita, petiolo crassiusculo 4–10 mm. longo; lamina anguste oblanceolata-oblonga vel rarius anguste elliptico-oblonga 7.5–12.5 cm. longa 2–4.5 cm. lata acuta vel rarius abrupte breviacuminata, basin versus longe anguste sensim attenuata, supra

in sicco flavo-viridis, costa venisque prominentibus, sublucida, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9 gracilibus inaequalibus angulo recto vel paullo latiore adscendentibus obliquis prominentibus subarcuatis prope marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis 3–4 cm. longè pedunculata erecta capitato-contracta 1–3 cm. lata densa pauci- vel multiflora, ramis paucis densifloris usque ad 5 mm. longis validis sparse minutissime puberulis vel fere omnino glabris, bracteis late triangularibus acutis c. 0.5 mm. longis, floribus sessilibus vel brevissime pedicellatis; hypanthium oblongo-turbatum 1 mm. longum minutissime puberulum, calyce 0.6 mm. longo ad medium 5-lobo, lobis latis subtrotundatis, disco tumido calycem fere aequante; corolla 7–8 mm. longa extus minutissime puberula vel fere glabra in alabastro apice rotundata ecornuta, tubo crassiusculo supra vix dilatato, lobis 5 oblongis obtusis patentibus vel subrecurvis tubo duplo brevioribus; filamenta exserta, antheris lineari-oblongis 2 mm. longis.—Brazil: Olho de Agoa, Province de Minas Geraes, 1816–21, *Auguste de Saint-Hilaire* (herb. Paris, type).

The species most closely related is *Rudgea ochroleuca* Muell. Arg., which differs in its short-pedunculate inflorescence, somewhat broader leaves, and short-corniculate corolla lobes.

Rudgea minor (Cham.), comb. nov. *Coffea minor* Cham. Linnaea 9: 227. 1834. *Rudgea Clausseniana* Benth. Linnaea 23: 461. 1850.

Rudgea mouririoides, sp. nov.—Floribus exceptis omnino glabra; ramuli graciles recti vel plus minusve flexuosi teretes ochracei vel pallide virides, internodiis elongatis; stipulae persistentes incrassatae in vaginam 4–5 mm. longam connatae apice setis paucis rigidis erectis persistentibus 5–9 mm. longis onustae; folia subsessilia opposita subcoriacea, petiolo crasso vix 2–3 mm. longo; lamina oblonga vel elliptico-oblonga 8–18.5 cm. longa 3.5–7.5 cm. lata apice acuta vel breviter abrupte acuminata, acumine triangulari acuto rare attenuato, basi late rotundata et breviter cordata, supra in sicco cinereo-viridis vel lutescenti-viridis, costa venisque prominulis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 13 gracilibus prominentibus angulo fere recto divergentibus prope marginem pallidum incrassatum conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis sessilis cymoso-corymbosa sed capituliformi-contracta c. 1. cm. longa et 2.5 cm. lata dense multiflora, ramis crassis minutissime puberulis vel glabratis brevibus, floribus sessilibus ad apices ramorum dense congestis, bracteis minutis vel obsoletis; hypanthium obovoideum minute puberulum fere 1 mm. longum, calyce 0.5 mm. longo 5-partito, laciniis inaequalibus oblongis vel ovalibus obtusis ciliolatis; corolla extus sparse minute puberula vel fere glabra in alabastro apice late obtusa ecornuta, tubo cylindraceo 3.5–4 mm. longo fauce dense barbato, lobis 5 oblongis patentibus vel recurvis obtusis tubo duplo brevioribus intus supra basin glabris; antherae inclusae; stylus longiuscule

exsertus.—Brazil: Bahia, *Blanchet 89* (herb. Paris, type). Bahia, *Blanchet 2313* (herb. Paris).

Rudgea obesiflora, sp. nov.—Arbuscula 5-metralis, trunco 6.5 cm. diam., omnino glabra, ramulis crassiusculis, vetustioribus pallidis, internodiis brevibus vel elongatis; stipulae subpersistentes pallidae 12–15 mm. longae late oblongae vel oblongo-cuneatae apice breviter multilaciniatae; folia breviter petiolata mediocria vel parva crasse membranacea, petiolo 5–7 mm. longo; lamina elliptico-oblonga vel lanceolato-oblonga 9–12.5 cm. longa 3–5 cm. lata longe anguste acuminata, acumine attenuato acuto, basi acuta vel acuminata, in sicco cinereo-viridis, supra opaca costa prominente, venis vix prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 8 in axillis foveolatis angulo semirecto adscendentibus elevatis arcuatis prope marginem junctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis 2–2.5 cm. longe pedunculata erecta trichotoma, ramis viridibus teretibus vel subcompressis c. 1 cm. longis apice 1–3-floris, floribus arcte sessilibus, bracteis minutis vel obsoletis; hypanthium anguste turbinatum 4–5 mm. longum; calyx subrotatus 4 mm. altus 7–8 mm. latus truncatus; corolla alba in alabastro apice obtusa et 5-corniculata, tubo crassissimo 10–12 mm. longo ad faucem 8 mm. lato basin versus vix angustiore, lobis late triangulari-ovatis obtusis 5–6 mm. longis intus glabris; antherae breviter exsertae lineares 6 mm. longae, filamentis filiformibus.—Peru: Upper Marañón, mouth of Río Santiago, upland forest, alt. 160 meters, September 18, 1924, *G. Tessmann 4070* (herb. Berol., type).

Among the rather numerous Peruvian species of *Rudgea*, this may be recognized immediately by the curious broad corollas, which are almost unique in the whole genus. The large pale narrow stipules also are distinctive, as well as the extraordinarily broad, saucer-shaped calyx.

Rudgea obtusa, sp. nov.—Arbuscula omnino glabra, ramulis crassiusculis teretibus, vetustioribus cinereo-ochraceis, novellis fusco-brunneis, internodiis abbreviatis; stipulae in vaginam 2–2.5 mm. longam incrassatam connatae late rotundatae apice 1.5 mm. longe subulato-mucronatae, margine setis paucis brevissimis deciduis onusto; folia brevissime petiolata opposita crasse coriacea, petiolo crasso 2–3 mm. longo; lamina oblonga vel anguste oblonga 6–10.5 cm. longa 2–4.5 cm. lata obtusa vel acutiuscula, interdum rotundata et brevissime apiculata, basi obtusa usque ad subcordata, supra lucida, brunnescens vel flavo-viridis, costa venisque manifestis sed vix elevatis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 6 vix prominulis gracilibus angulo semirecto adscendentibus obliquis vix conjunctis, nervulis plerumque obsoletis; inflorescentia terminalis crasse 8–12 mm. longe pedunculata erecta cymoso-corymbosa trichotoma corollis exclusis 1.5–2 cm. longa et usque ad 4 cm. lata, ramis crassis fuscis simplicibus et

apice dense pauci- vel multifloris vel prope apicem pauciramosis, bracteis brevissimis margine brevissime setulosis, floribus arcte sessilibus confertis; hypanthium 1.5 mm. longum columnare, calyce fere aequilongo 2 mm. lato margine brevissime inaequaliter acute denticulato; corolla alba magna in alabastro apice late rotundata ecornuta, tubo gracillimo 5.5–8.5 cm. longo 1.5–2.2 mm. lato supra non dilatato fauce non barbato, lobis anguste oblongis 13–14 mm. longis versus apicem obtusum paullo angustatis patentibus intus glabris; filamenta 1 cm. longe exserta, antheris linearibus 4 mm. longis recurvis; stylus inclusus capillaris glaber; baccae ovals vel late ellipticae 8–10 mm. longae basi et apice rotundatae fere laeves.—Brazil: Rio Arinos, Matto Grosso, December, 1914, *J. G. Kuhlmann 1484. K* (herb. Berol., type). Santa Anna da Chapada, Matto Grosso, 1903, *A. Robert 572b* (herb. Kew.).

A striking plant because of the combination of leathery, chiefly obtuse leaves and unusually elongate flowers.

Rudgea palicouroides (Mart.) Muell. Arg. Flora 59: 455. 1876. *Psychotria palicouroides* Mart. Flora 24, pt. 2: Beibl. 64. 1841.

The type, collected by Martius somewhere in eastern Brazil, is represented in the herbarium of Field Museum by a photograph. The following specimens are conspecific:

Brazil: Cuyabá, Matto Grosso, in silvula ripae rivi, November 21, 1902, *Malme 2631* (herb. Stockholm); an arborescent shrub 2–3 meters high; flowers dimorphous, the corolla white. Cuyabá, November 28, 1902, *Malme* (S).

In some specimens the leaves are as much as 21 cm. long and 10.5 cm. wide. They are lustrous and of a handsome yellowish green.

Rudgea recurva Muell. Arg. Flora 59: 456. 1876.

Brazil: Without locality, *Sello* (herb. Kew.; probably the type collection). Organ Mountains, Rio de Janeiro, January, 1838, *Miers 4119* (K, herb. Par.). Prov. Rio de Janeiro, in 1841, *Miers 4119* (K), *4116* (K). Santa Catharina, *F. Mueller 452* (K), *368* (K).

Rudgea Saint-Hilairei, sp. nov.—Corollis exceptis omnino glabra, ramulis gracilibus teretibus, junioribus brunneis, internodiis elongatis interdum foliis aequilongis; stipulae persistentes incrassatae in vaginam subtruncatam connatae prope basin setis paucis dense congestis brevissimis deciduis onustae; folia brevissime petiolata opposita subcoriacea vel crasse membranacea, petiolo crasso 2–4 mm. longo; lamina oblonga usque ad oblongo-elliptica 6.5–11.5 cm. longa 2–5 cm. lata acuta vel subabrupte breviter acuminata basi obtusa vel anguste rotundata, supra in sicco cinereo- vel luteo-viridis, costa venisque prominulis, subtus pallidior, plus minusve brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 9 prominulis gracilibus angulo semirecto vel saepius latiore adscen-

dentibus arcuatis juxta marginem conjunctis vel in marginem desinentibus, nervulis obscuris; inflorescentia terminalis corymbosa et capituliformi-contracta basi acuta 5–8 mm. longe pedunculata erecta densissime multiflora c. 1.5 cm. longa et 2 cm. lata, ramis primariis verticillatis suberectis crassis brevissimis, ramis omnibus basi conspicue bracteatis, bracteis late ovatis obtusis c. 1 mm. longis persistentibus, floribus congestis sessilibus; hypanthium 1 mm. longum, calyce late campanulato 1–1.2 mm. longo subtruncato vel breviter undulato-dentato; corolla extus minutissime puberula in alabastro apice rotundata ecornuta, tubo crassiusculo 4–5 mm. longo supra vix dilatato fauce non barbato, lobis 4 late triangulari-oblongis obtusis vel acutiusculis patentibus intus glabris 2–2.5 mm. longis; antherae semiexsertae; stylus inclusus.—Brazil: Province de Espirito Santo, 1816–21, *Auguste de Saint-Hilaire B.351* (herb. Paris, type), *B.366* (herb. Paris).

Notable for the rather large and thick, nearly sessile leaves, and for the small and exceedingly dense, flat-topped inflorescence.

Rudgea sororia, sp. nov.—Frutex 2-metralis omnino glaber, ramulis rigidis teretibus viridibus, internodiis elongatis; stipulae magnae persistentes distinctae late oblongae vel obovatae 10–15 mm. longae primo virides serius incrassatae et pallidae crebre striato-nerviae profunde multilaciniatae; folia fere sessilia opposita crasse papyracea, petiolo crassiusculo 2–4 mm. longo; lamina oblonga 12–15 cm. longa 4.5 cm. lata longe anguste attenuato-acuminata basi acuta vel subobtusa, supra in sicco cinereo-viridis, costa elevata, venis prominulis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 9 obliquis angulo semirecto adscendentibus gracilibus prominentibus fere rectis vel subcurvis remote a margine conjunctis; inflorescentia terminalis c. 13 mm. longe pedunculata cymoso-corymbosa 3–3.5 cm. longa et aequilata, ramis brevibus, infimis verticillatis, floribus in cymulas plerumque trifloras dispositis, flore terminali sessili, lateralibus usque ad 6 mm. longe pedicellatis, pedicellis fructiferis rigidis; bacca globosa 7–8 mm. longa basi et apice rotundata fere laevis, calyce persistente coronata; calyx corolloideus magnus campanulatus 12 mm. longus et 8 mm. latus basi obtusus, dentibus 5 triangularibus acutis 3 mm. longis erectis; corolla alba in alabastro linearis 15 mm. longa apice obtusa ecornuta; semina 2 hemisphaerica 5 mm. longa; calyx fructifer usque ad 18 mm. longus.—Peru: In forest, Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 meters, May–June, 1930, *G. Klug 1310* (herb. Field Mus. No. 622,234, type).

This Amazonian plant belongs to Mueller's section *Carpanthus*, of which only a single species has been listed. The section is characterized by its large corolloid calyx, this being persistent and accrescent in fruit. *Rudgea bacciflora* Muell. Arg., the typical species of the section, was described from Brazil, the region being unknown. It differs from *R. sororia* in having a fruiting calyx only 8 mm. long.

Rudgea stenophylla (Krause), comb. nov. *Palicourea stenophylla* Krause, Bot. Jahrb. 40: 338. 1908.

Examination of a photograph and fragment of the type (*Weberbauer 4548* from Moyobamba, Peru) shows clearly that this plant is a *Rudgea* rather than a *Palicourea*. It is closely related to *R. microcarpa* (R. & P.) Standl.

Rudgea canephorantha (Wernham), comb. nov. *Psychotria canephorantha* Wernham, Journ. Bot. 55: 338. 1917.

This plant, if one may rely upon the form of the stipules, is properly referable to *Rudgea*. As in other species of the genus, the thickened setae are deciduous at an early stage of development, and probably were not seen by Wernham, although they are conspicuous enough on some of the recent collections made in Peru.

Rudgea Traillii, sp. nov.—Arbuscula omnino glabra, ramulis gracilibus teretibus, novellis olivaceis, internodiis elongatis; stipulae persistentes crassae olivaceae in vaginam subtruncatam vel breviter bilobam 2.5 mm. longam connatae, lobis dorso infra apicem setis paucis fasciculatis pallidis 1–1.5 mm. longis onustis; folia mediocria arcte sessilia crasse membranacea oblongo-ovata vel lanceolato-oblonga 9–11.5 cm. longa 3.5–5.5 cm. lata longe sensim attenuato-acuminata basi obtusa vel late rotundata, supra in sicco pallide olivacea, costa venisque non elevatis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9 gracillimis prominentibus angulo latiusculo interdum fere recto abeuntibus fere rectis prope marginem conjunctis, nervulis prominulis inconspicuis arcte reticulatis; flores terminales sessiles capitati pauci exinvolucrati; hypanthium 1 mm. longum, calyce late campanulato 2 mm. longo brevissime et latissime lobulato, lobis late rotundatis vel subtruncatis; corolla immatura calyce vix longior apice rotundata ecornuta; bacca ovalis 9 mm. longa 7 mm. lata basi et apice rotundata.—Brazil: Porto Salvo, Rio Purus, upper Amazon, October 4, 1874, *J. W. H. Traill 424* (herb. Kew., type).

Belonging to the group of species characterized by small, sessile, capitate inflorescences. Remarkable for the sessile leaves, broad at the base and long-attenuate toward the apex.

Rudgea Trianae, sp. nov.—Ramuli crassiusculi subteretes fusco-brunnei glabri, internodiis valde elongatis; stipulae magnae persistentes late oblongae vel ellipticae subliberae erectae c. 1.5 cm. longae crebre striato-striatae glabrae prope apicem profunde laciniatae, laciniis rigidis saepe pallidis; folia magna breviter petiolata crasse coriacea opposita, petiolo crasso 8–12 mm. longo; lamina elliptico-oblonga, interdum supra medium paullo latissima, 17–19 cm. longa 6–7.5 cm. lata subabrupte acuta vel breviter acuminata, acumine obtusiusculo, basin versus breviter angustata, supra in sicco fusca vel fusco-viridis, costa non vel vix elevata, subtus brun-

nescens, glabra, costa gracili elevata, nervis lateralibus utroque latere c. 10 gracilibus prominentibus angulo latiusculo adscendentibus obliquis leviter curvis prope marginem saepe revolutum conjunctis, nervulis obscuris vix prominulis laxe reticulatis; inflorescentia terminalis erecta crasse 4 cm. longe pedunculata cymoso-paniculata c. 7 cm. longa et 4.5 cm. lata dense multiflora basi trichotoma, ramis superioribus subverticillatis crassis compressis sparse puberulis, bracteis basilaribus oblongis acutis 1.5 cm. longis, superioribus interdum fere 2 cm. longis oblongo-linearibus acutis vel acuminatis patentibus crassis ciliatis, floribus sessilibus vel subsessilibus dense cymoso-congestis; hypanthium obconicum 1 mm. longum glabratum, calyce 5-partito, laciniis linearibus vel lanceolato-linearibus attenuatis 2.5–3.5 mm. longis dense ciliatis adscendentibus; cetera ignota.—Colombia: Provincia de Barbacoas, 1851–57, *J. Triana 1713* (herb. Paris, type).

This plant I have referred to the genus *Rudgea* because of the form of its stipules, which would exclude it from other related groups. Otherwise it bears no close resemblance to any *Rudgea* which I have seen. It is noteworthy particularly for the numerous large bracts of the inflorescence.

A second collection of this species has appeared in a recent collection from Colombia: Quibdó, Río Atrato, Intendencia del Chocó, 60 meters, April–May, 1931, *W. A. Archer 1921*. A slender shrub 3 meters high; flowers white; fruiting spike gray, the fruit the color of partially ripe tomatoes.

Rudgea viburnoides (Cham.) Benth. var. *latifolia*, var. nov.—Folia firme coriacea brevissime crasse petiolata, lamina orbiculari late ovali vel ovato-rotundata 8–12 cm. longa et fere aequilata apice late rotundata vel subtruncata basi rotundata vel truncata; ceteris formae typicae omnino similis.—Brazil: Cuiabá, Matto Grosso, October, 1914, *J. G. Kuhlmann 1531* (herb. Inst. Biol. S. Paulo No. 11654, type; fragm. in herb. Field Mus.). São Luiz de Cáceres, Matto Grosso, in “cerrado,” a shrub 2–4 meters high, with white flowers, September, 1911, *F. C. Hoehne 4494* (herb. S. Paulo No. 11652).

The plant is a striking variant from the typical form, which has much narrower leaves. In other respects the Matto Grosso plant does not appear to differ from the usual, widely distributed form.

Sabicea amazonensis Wernham, Monogr. Sabicea 47. 1914.

The species was described by Wernham from Amazonian Brazil and Venezuela, and has not been known from any other country until its range was extended by the following collection: Peru: Florida, Río Putumayo, Dept. Loreto, 200 meters, in forest, *Klug 2085*. A vine; corolla white.

Sabicea reflexa, sp. nov.—Scandens, ramulis teretibus fusco-ferrugineis dense strigosis, internodiis foliis brevioribus; sepala rotundato-ovata glabrata obtusa 4 mm. longa cito reflexa; folia graciliter petiolata firme membranacea, petiolo 13–15 mm. longo strigoso; lamina ovato-oblonga vel lanceolato-oblonga 7.5–10 cm. longa 3–4 cm. lata obtuse acuminata basi acuta vel abrupte contracta, supra olivacea ad venas sparse strigosa aliter glabra, subtus fere concolor, tantum ad venas fulvo-strigosa, nervis prominentibus utroque latere 6–7 leviter arcuatis; inflorescentiae axillares 4–7 mm. longe pedunculatae, primo compactae, serius laxiores, multiflorae, corollis exclusis 1–2 cm. latis, bracteis basalibus stipulis conformibus 3–4 mm. longis subdistinctis patentibus vel reflexis, ceteris reductis et inconspicuis, pedicellis 1–2 mm. longis; hypanthium obovoideo-globosum 2 mm. longum dense strigosum; calyx 2–2.5 mm. longus glabratus, parte inferiore campanulata, ad medium 5-lobus, lobis late ovato-deltaeideis in sicco ferrugineis mox recurvis obtusis; corolla alba extus dense fulvo-strigosa, tubo 6–7 mm. longo supra paullo dilatato, lobis acutiusculis lanceolato-ovatis 2 mm. longis apice barbatis.—Colombia: Umbria, Comisaría del Putumayo, alt. 325 meters, in forest, October–November, 1930, *G. Klug 1782* (herb. Field Mus. No. 641,425, type).

The relationship of the plant is with *Sabicea asperula* Wernham and *S. paraensis* Wernham, but both those species differ in having linear or setaceous calyx lobes. *S. reflexa* is well marked by its unusually broad and strongly reflexed or recurved calyx lobes.

Schenckia blumenaviensis Schum. var. **macrocarpa**, var. nov.—A forma typica foliis minus pubescentibus capsula majore angustiore 8–9 mm. longa glabrata paullo recedit.—Brazil: Porto Alegre, Rio Grande do Sul, in silvula umbrosa, March 3, 1902, *G. O. A. Malme 1444* (herb. Stockholm, type).

In the typical form of the species the rather smaller leaves are much more copiously pubescent, and the relatively broader capsule is only 5–6 mm. long. There appear to be no other differences between the two forms.

Of typical *S. blumenaviensis* the following collections have been examined: Brazil: Blumenau, Santa Catharina, in monte de Coceiro, *Schenck 644* (photo. of type ex herb. Berol.). Without locality, *H. Mosén* (herb. Paris). Serra de Caracol, São Paulo, December, 1873, *Mosén 1372* (herb. Stockholm; probably the same collection as the last preceding one).

Sickingia corumbensis, sp. nov.—Frutex arborescens vel arbor parva usque ad 4 m. alta, ramulis crassiusculis rigidis ferrugineis rimosis, novellis sparse minute adpresso-pilosulis, internodiis abbreviatis; stipulae deciduae erectae anguste triangulares dorso adpresso-pilosulae; folia mediocria breviter petiolata opposita crasse papyracea,

petiolo gracili 7-9 mm. longo glabro; lamina late elliptica vel rotundato-elliptica, interdum obovato-rotundata, 7.5-14.5 cm. longa, 5.5-10 cm. lata, acutiuscula vel apice rotundata et brevissime obtuse producta, basi rotundata, interdum breviter decurrens vel brevissime cordata, supra in sicco viridis, glabra, costa venisque prominulis, venulis prominulis et arctissime reticulatis, subtus paullo pallidior glabra vel ad costam minute pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 16 in axillis minute barbatis gracillimis prominentibus angulo latiusculo adscendentibus obliquis juxta marginem conjunctis, nervulis prominentibus arctissime reticulatis; inflorescentiae axillares cymoso-paniculatae dense multiflorae 2.5-3 cm. longa et aequilatae congestae 2.5-3.5 cm. longe pedunculatae, floribus sessilibus vel interdum breviter pedicellatis, bracteis subpersistentibus late ovatis acutis 1.5-2 mm. longis; hypanthium oblongo-turbinatum 3 mm. longum sparse strigillosum; calyx late campanulatus 2.5-3 mm. longus viridis sparse strigillosus interdum uno latere subfissus, margine irregulariter breviter obtuse lobato; corolla in alabastro clausa ellipsoidea extus densissime lutescentisericea apice obtusa 6-7 mm. longa, in anthesi fere ad basin lobata, lobis late oblongis obtusis intus glabris recurvis, tubo lato fauce dense longe barbato; stamina longiexserta, filamentis gracilibus sparse longipilosis, antheris flavis oblongis 2.5 mm. longis; capsula globosa 2 cm. diam. basi et apice late rotundata pallide brunnescens brevissime irregulariter tuberculata.—Brazil: In silva subruderali clara, Corumbá, State of Matto Grosso, December 20, 1902, G. O. A. Malme 2733 (herb. Stockholm, type); April 9, 1903, Malme (S).

A well-marked species, not likely to be confused with any other known from Brazil. The leaves resemble those of *Sickingia erythroylon* Willd., of Venezuela.

***Sickingia mollis*, sp. nov.**—Ramuli crassiusculi teretes rimosi et lenticellati dense hispiduli, internodiis brevibus; stipulae non visae; folia mediocria breviter petiolata subcoriacea in sicco fusca, petiolo crasso 7-10 mm. longo dense velutino-pilosulo; lamina late elliptica vel late obovato-elliptica circa 15 cm. longa et 9 cm. lata acuta et breviter caudato-acuminata, acumine angusto attenuato fere 1 cm. longo, basin versus paullo angustata, basi ipsa rotundata et breviter cordata, supra glabra, costa nervisque impressis, subtus pallidior, ubique densissime velutino-pilosula, costa elevata, nervis lateralibus utroque latere c. 15 gracilibus elevatis fere rectis, infimis angulo fere recto abeuntibus, superioribus angulo semirecto adscendentibus, venulis obscuris; inflorescentia terminalis crasse 1 cm. longe pedunculata, multiflora condensata et capitiformis, floribus sessilibus, bracteis parvis deciduis; hypanthium densissime pilosulum 3 mm. longum; calyx membranaceus late campanulatus 6-8 mm. longus et aequilatus dense pilosulus profunde lobatus, lobis late ovatis obtusis ciliatis; corolla in alabastro extus dense tomentosa.—Colombia: Without locality, *José Celestino Mutis 1126* (U. S. Nat. Herb. No. 1,560,239, type; fragm. in herb. Field Mus.).

The relationship of the tree here described is clearly with *Sickingia cordifolia* Hook. f., likewise Colombian, but that differs in having leaves that are glabrous or at least glabrate at maturity, an open inflorescence, and a short calyx.

Sipanea carnea Neumann, Rev. Hort. II. 2: 445. 1844.

This is the only plant assigned to the genus *Sipanea* that is not a native of tropical America. Wernham, in his account of the species of *Sipanea* (Journ. Bot. 55: 171. 1915), mentions *Sipanea carnea*, but makes no attempt at a disposition of it, stating that Martius (in *Flora Brasiliensis*) "leaves it without mention, possibly because this species was based on a plant grown from seed sent from an unnamed locality in South America."

In the Delessert Herbarium there are several sheets of *Sipanea carnea* which make it possible to determine its status. In fact, its position already had been indicated properly, as may be found by consulting Oliver's *Flora of Tropical Africa* (3: 46. 1877). There, it is true, the name *Sipanea carnea* is credited to "Hort. ex Hook.," but that name doubtless relates to the same cultivated plant as *Sipanea carnea* Neumann. The plant is listed in the work cited as *Pentas carnea* Benth., for which the proper name is really *Pentas lanceolata* (Forsk.) Schum.

The Delessert Herbarium specimens, all of which evidently are conspecific, are the following: Hort. Paris, July, 1844, labeled *Sipanea carnea*. Jardin de Passy, June, 1845, "*Sipanea carnea* Ad. Brong." "Iles Maurice, de Madagascar et Comorres," in 1838, *Macwilliam*, "*Sipanea carnea* Brongn." Martinique, environs de Saint Pierre, in 1853, *Belanger* 611.

The plant is a native of eastern tropical Africa. In Martinique it is or has been in cultivation, and perhaps has become naturalized. At any rate, *Sipanea carnea* need receive no further consideration in treating of American Rubiaceae.

Sphinctanthus microphyllus Schum. in Mart. Fl. Bras. 6, pt. 6: 354. 1889.

The species was based upon *Riedel* 942 and 1201 from Matto Grosso, Brazil. A specimen of the latter number is in the herbarium of Field Museum. Clearly conspecific are the two following Brazilian collections: Cuyabá, Matto Grosso, in silva clara temp. pluv. plus minusve inundata, June, 1902, *G. O. A. Malme* 1872 (herb. Stockholm); a shrub up to 2 meters high; fruits yellow. Cuyabá, in dumetis temp. pluv. plus minusve inundatis prope flumen Cuyabá, November, 1902, *Malme* 1872a; in flower.

Stachyarrhena pedicellata, sp. nov.—Omnino glabra, ramulis crassis teretibus fusco-ferrugineis rimosis interdum vernicosis, internodiis brevibus; stipulae persistentes erectae in vaginam truncatam ciliolatam 4 mm. longam connatae; folia breviter petiolata opposita crasse coriacea, petiolo crasso 7–10 mm. longo; lamina oblongo-obovata 7–11.5 cm. longa 3.5–5.5 cm. lata obtusa vel subobtusa, interdum brevissime obtuse protracta, basin versus breviter angustata, basi ipsa acuta, supra in sicco fusco-nigrescens, lucida, costa venisque non elevatis, subtus sublucida, pallide brunnescens, costa crassiuscula elevata, nervis lateralibus utroque latere c. 10 gracilibus prominulis angulo latiusculo adscendentibus fere rectis juxta marginem conjunctis, nervulis obscuris arcte reticulatis; inflorescentia terminalis racemoso-paniculata sessilis pauciramosa c. 8 cm. longa, racemis paucis inferne nudis supra paucifloris, floribus pedicellatis vel interdum sessilibus, pedicellis crassiusculis usque ad 5 mm. longis saepe recurvis; calyx floris masculi late campanulatus c. 5 mm. longus et 7 mm. latus truncatus apice subcontractus; discus valde incrassatus; corolla in alabastro apice late obtusa extus glabra; cetera ignota.—Colombia: Without locality, *Justin Goudot* (herb. Paris, type).

The present plant, although almost certainly referable to *Stachyarrhena*, differs from the few other members of the genus in having pedicellate flowers. The genus has been known heretofore from Panama and from Amazonian Brazil. The present species, therefore, helps to fill the gap in the previously indicated range of the genus.

Tocoyena (?) tabascensis, sp. nov.—Ramuli graciles fuscescentes lenticellis pallidis notati; stipulae deciduae lanceolatae longissime attenuatae fere 2 cm. longae erectae glabrae; folia majuscula petiolata opposita membranacea, petiolo gracili 3–3.5 cm. longo sparse hispidulo vel glabrato; lamina late oblongo-elliptica c. 20 cm. longa et 10.5 cm. lata acuta basi subrotundata vel acutiuscula, supra in sicco fusca, ad venas sparse pilosula, aliter glabra, costa venisque vix prominentibus, subtus paullo pallidior, sparse ad venas hispidula, costa gracili elevata, nervis lateralibus utroque latere c. 11 gracillimis prominentibus angulo latiusculo adscendentibus obliquis leviter curvis marginem attingentibus, nervulis prominulis laxae reticulatis; inflorescentia ut videtur terminalis cymosa et triflora vel trichotoma cum ramis trifloris, longe pedunculata et basi foliaceo-bracteata, floribus sessilibus vel 1 cm. longe pedicellatis, pedicello glabro apice bibracteolato, bracteolis oppositis oblongis glabris foliaceis 6 mm. longis; hypanthium late obovoideum 2.5 mm. longum glabrum; calyx 4-partitus, lobis late rotundatis ciliolatis c. 4 mm. longis; corolla extus glabra hypocrateriformis, tubo 2.5–4.5 cm. longo medio 3 mm. lato intus dense piloso, supra paullo dilatato, fauce usque ad 6 mm. lato, lobis 4 patentibus late obovato-rotundatis c. 12 mm. longis intus glabris in alabastro ut videtur imbricatis; antherae sessiles in fauce insertae lineares 6 mm. longae inclusae; stylus filiformis glaber 1.5 cm. longus, ramis 2 linearibus 6 mm. longis.—

Mexico: Paso de Espejo, Tabasco, November 25, 1888, *J. N. Rovirosa* 301 (herb. Kew., type).

Vernacular name, "popiste" or "popixtle."

The proper position of this Mexican plant is decidedly uncertain. I do not believe that it belongs in *Tocoyena*, but it appears equally alien in any of the other American genera of Rubiaceae. The ovary is 2-celled and multiovulate, but the flowers are so young that nothing more can be guessed as to the nature of the fruit. The tribal position of the plant, therefore, may only be surmised, and it may well be that the plant belongs in some other tribe than the *Mussaendeae*. It is probable that it represents an undescribed genus, but until more complete material may be had for study, I am unwilling to describe it as such.

COMPOSITAE

Alomia microcarpa (Benth.) Robinson, f. ***Torresii***, forma nov. A forma typica corollis albis differt.—Costa Rica: La Pitahaya, Province of Cartago, 1931, *Rubén Torres Rojas* 196 (herb. Field Mus. No. 650,667, type).

One of the most beautiful sights of the Meseta Central of Costa Rica, especially in the vicinity of Cartago, consists of the wide fields and pastures that at certain seasons of the year become almost solid sheets of blue because of the abundance of Santa Lucía, a plant well known to all Costa Ricans. This handsome flower is almost exactly like the ageratum that is so common in northern gardens. I do not remember ever to have seen in Costa Rica white-flowered plants of Santa Lucía, and probably the albino form here named is a rare one.

Chrysactinia pinnata Wats. Proc. Amer. Acad. 25: 154. 1890; Rydb. N. Amer. Fl. 34: 181. 1916.

Of named material referable to this species I have seen only Pringle's original collection, from Monterrey, Nuevo León, and Rydberg reports the species only from Nuevo León. The following recent collections have come to the writer's attention: Tamaulipas: Sierra near Jaumave, January, 1932, *H. W. von Rozynski* 316. Near San Vicente, Jaumave, January, 1932, *von Rozynski* 317.

Lepachys columnifera (Nutt.) Macbride, f. ***pulcherrima*** (DC.), comb. nov. *Obeliscaria pulcherrima* DC. Prodr. 5: 559. 1836. *L. columnaris* (Pursh) Torr. & Gray, var. *pulcherrima* Torr. & Gray, Fl. N. Amer. 2: 313. 1842.

The typical form of the species has bright yellow rays. Quite as common, usually, is the form whose rays are partly or wholly

brownish purple. This is merely a color variant, and therefore best treated as a form rather than a variety.

***Liatris elegans* Willd. f. *Fisheri*, forma nov.**—A forma typica floribus bracteisque ad apicem pallide luteis differt.—Texas: Copperas Cove, on hillsides near and on the highway, August 26, 1934, *George L. Fisher 3456* (herb. Field Mus., type).

While white-flowered forms have been reported for various species of *Liatris*, and are not especially rare in some regions, yellow-flowered forms apparently are decidedly rare. The collector states that both the flowers and the long petal-like tips of the bracts are lemon-yellow in color.

***Perezia nana* Gray.**—In Mexico this common and characteristic plant of the sandy desert regions is reported from the states of Sonora, Chihuahua, and Coahuila by Bacigalupi (Contr. Gray Herb. 97: 49. 1931). It occurs also in Durango, as attested by a specimen in the herbarium of Field Museum: Indé, Durango, November, 1927, *B. P. Reko 5292*.

***Perezia nudicaulis* Gray.**—In the *Monograph of the Genus Perezia*, Section *Acourtia*, published recently by Bacigalupi (Contr. Gray Herb. 97. 1931), this species is reported in Central America only from Guatemala and Salvador. Another country may be added to the area of distribution upon the basis of the following collections: Honduras: Vicinity of Siguatopeque, Dept. Comayagua, in pine forest, 1080–1400 meters, February, 1928, *Standley 56235, 55861*. Llano de la Puerta, near Copán, 900 meters, January, 1907, *Pittier 1829*. The plant is frequent in the grassy pinelands on the hills about Siguatopeque. The flower heads are white.

Mr. Bacigalupi's otherwise excellent account of the Mexican species of the genus *Perezia* might have been improved substantially by the citation of the ample collections in the United States National Herbarium. That collection contains by far the greatest number of specimens from Mexico and Central America to be found in any herbarium of the world, and any monograph of a group of plants represented in those regions of tropical America must remain pitifully incomplete unless the National Herbarium collections are taken into account. Failure to examine them in the case of eastern botanists engaged in monographic work scarcely can be excused upon the ground of inaccessibility of Washington, and moreover the policy of the National Museum always has been uniformly generous in lending material for monographic studies.

Schistocarpha oppositifolia (Kuntze) Rydb.—This essentially tropical species is widely distributed in tropical America, and according to Rydberg in his account of the genus (N. Amer. Fl. 34: 306. 1927) it extends northward to San Luis Potosí. A recent collection shows that it occurs, rather unexpectedly, also in Tamaulipas: Jaumave, stony river valley, September 30, 1931, *H. W. von Rozyński* 76.

Vernonia angusta (Gleason), comb. nov. *Eremosis angusta* Gleason, N. Amer. Fl. 33: 98. 1922.

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REVISION OF THE GENUS COREOPSIS

BY

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REVISION OF THE GENUS COREOPSIS

EARL EDWARD SHERFF

PREFACE

The revision of the genus *Coreopsis* as set forth in the following pages is the outcome of a suggestion received in 1912. Early in that year Dr. Jesse M. Greenman, then Assistant Curator of Taxonomy at Field Museum (now Curator of the Herbarium at the Missouri Botanical Garden), selected from the Compositae the closely related genera *Bidens*, *Coreopsis*, and *Cosmos* as offering great promise for the student who should study them painstakingly. In turn, each of these genera has been studied by me since then. The results of my investigations in *Cosmos* have been summarized in large part in an earlier paper (Revision of the Genus *Cosmos*, Field Mus. Bot. Ser. 8: 401-447. 1932) and will be concluded in a subsequent treatment to appear in the *North American Flora*. My studies in *Bidens* and *Coreopsis* have been detailed in many articles which have appeared during more than two decades, particularly in the *Botanical Gazette* and the *American Journal of Botany*, but also in the *Journal of the Washington Academy of Sciences* and the *Journal of the Pan-Pacific Research Institution*. In the present state of our knowledge, it is impossible, of course, to render a complete account of all the species in these two genera. Perhaps many, especially in *Bidens*, remain to be discovered. I have, however, attempted a revisional survey of each genus which should be as complete for the entire world as the many facilities offered me for research would permit. Treatments of the species growing in North America are to appear soon in the *North American Flora*. A comprehensive revision of the entire genus *Bidens* will appear in separate volumes of the Field Museum Botanical Series. The present paper attempts a revisional summary of the entire genus of *Coreopsis*.

No attempt has been made to present an extended history of the genus *Coreopsis*. This history has been somewhat interlocked with that of *Bidens* and in my monograph of that genus I have presented a historical résumé to which readers are here referred. In addition, numerous references given accompanying the various sections (infra) may be consulted with profit.

Many of the world's principal scientific institutions have assisted by lending materials or by permitting access to their herbaria,

libraries, or gardens. My very deep gratitude should be expressed here to the staffs of all these institutions and particularly to the following individuals: Dr. Ivan Murray Johnston, Research Associate, Arnold Arboretum; Dr. Adolph Engler (deceased), former Director, Dr. Ludwig Diels, present Director, and Dr. Johannes Matfeld, Curator, Botanical Garden of Berlin; Dr. Alfred Barton Rendle, former Keeper of Botany, and Dr. John Ramsbottom, present Keeper of Botany, British Museum of Natural History; Dr. E. De Wildeman, former Director, Dr. Walter Robyns, present Director, and Dr. P. Staner (until recently Attaché at the Museum of the Belgian Congo at Tervueren but now on the staff), of the National Botanical Garden at Brussels; Dr. Enrico Carano, former Director, Dr. Giovanni Negri, present Director, and Dr. Renato Pampanini, former Adjutant and Conservator at the Institute of Botany of the University of Florence (now Professor of Botany and Director at the Botanical Institute of the Royal University, Cagliari, Italy); Dr. John Isaac Briquet (deceased), former Director of the Conservatory and Botanical Garden of Geneva; Dr. Benjamin Lincoln Robinson (deceased), former Curator, and Mr. Charles A. Weatherby, Assistant Curator, Gray Herbarium of Harvard University; Dr. Edgar Irmscher, Curator of the Herbarium of the Botanical Institute at Hamburg; Sir David Prain, former Director, Sir Arthur W. Hill, present Director, Dr. Otto Stapf (deceased), former Keeper of Herbarium, Mr. A. D. Cotton, present Keeper of Herbarium, and Miss M. L. Green, Botanist, Royal Botanical Gardens of Kew; Dr. Benjamin Daydon Jackson (deceased), former Secretary of the Linnean Society of London; Dr. Jesse More Greenman, Curator of the Herbarium, Missouri Botanical Garden; Dr. Nathaniel Lord Britton (deceased), former Director, New York Botanical Garden; Dr. H. LeComte, honorary Professor, Dr. Henri Humbert, Professor, Mr. Louis Anfray (deceased), former Preparator, and Dr. Paul Danguy, Vice-Director, Museum of Natural History of Paris; Dr. Philip Munz, Professor of Botany, Pomona College; Dr. Ira L. Wiggins, Stanford University; Dr. William R. Maxon, Associate Curator, United States National Museum; Dr. Richard Wettstein-Westersheim (deceased), former Director, Botanical Garden and Institute of Vienna.

My work has been carried on from time to time in most of the above institutions and in numerous others, but principally in the Field Museum of Natural History. To the authorities of Field Museum am I indeed indebted for the many courtesies and invaluable aid extended to me over a long period of time. Especially do I

thank Mr. Stephen C. Simms, Director, Drs. Charles F. Millsbaugh (deceased), former Curator of Botany, and B. E. Dahlgren, present Curator of Botany, and Mr. Paul C. Standley, Associate Curator of the Herbarium, for their assistance in many ways.

Much effort has been made to eliminate typographic errors in the text. Throughout the preparation of my original manuscript and final text I have been aided greatly in the proof reading by my wife, Fern R. Seeley Sherff. It is a pleasure to acknowledge here her cooperation.

During the progress of my work, I have photographed several hundred of the more important specimens studied, such as types and cotypes. Complete sets of these photographs are in my private collection and in the Herbarium of the Field Museum of Natural History. Throughout the text the term "cotype" is used to connote a duplicate of the type, as is usually shown, for example, by the use of the same collection number.

Genus COREOPSIS: Descriptio

L. Gen. Pl. ed. 5. Num. 879. 1754; Sp. Pl. 907. 1753 (maxima pro parte); *Acispermum* Neck. Elem. Bot. 1: 34, No. 64. 1790. (For other synonyms see under names of various sections.)

Plantae (familiae Compositarum) herbaceae vel saepe fruticulosae, glabrae vel pubescentes. Folia opposita vel rarius alterna, indivisa atque integra dentatae, vel tripartita, vel semel bis terve ternatim vel pinnatim dissecta. Capitula mediocria vel majuscula, manifeste pedunculata vel pedicellata, solitaria vel laxe corymboso-paniculata, radiata. Involucri bracteae plerumque in 2 raro in 3-4 seriebus dispositae, basi plus minusve connatae, exteriores plerumque herbaceae vel submembranaceae adpressae vel saepe patentes, interiores plerumque majores brunneae vel flavae membranaceae. Receptaculum planum vel convexiusculum. Flores radii ligulati, 1-seriati, neutri vel rarius styliiferi ac fertiles vel steriles, lamina patente integri vel paucidentati, plerumque flavi rarius rosacei vel discolores. Paleae planae vel concaviusculae membranaceae striatae flores tubulosos subtendentes. Flores tubulosi flavi vel superne colorati, hermaphroditi ac fertiles vel intimi steriles, regulares, corollae limbo parum ampliati apice breviter 4- vel saepissime 5-dentati, saepe ad gutturi basim anulo glabro pilosove circumscripti; antheris basi integris vel (auriculis minutis) sagittatis; stylorum ramis apice truncatis vel conicis vel breviter caudato-appendiculatis. Achaenia obcompressa, orbiculata vel oblonga vel plus minusve

oblongo-linearia, saepe 2-alata alis membranaceis vel indurato-crassatis integris vel fractis vel pectinato-dentatis planis vel incurvatis, glabra vel (marginibus praesertim) villosa, epapposa vel aristis lanceolatis linearibusve glabris erecto-hispidulisve vel 2 dentibus vel 2 paleis papposa (interdum medio apice poculo minuto coronata), numquam aristis retrorsum hamosis munita.

Type species: *Coreopsis lanceolata* L.

SECTIONES GENERIS

Sect. I. *Electra* (DC.) Blake, Proc. Amer. Acad. n. ser. 41: 337. 1913; pro genere DC. Prodr. 5: 630. 1836. Nos. 1–4. (This and the next four sections included by Blake under the subgenus *Leptosyne* [DC.] Blake, loc. cit. 336. 1913; pro genere DC. Prodr. 5: 531. 1836; etiam A. Gray, Proc. Amer. Acad. 17: 218. 1882; etiam A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 299. 1884; pro sect. *Coreopsidis* O. Hoffm. in Engler & Prantl, Nat. Pflanzenf. 4, pt. 5: 243. 1890 [exclud. *Epilepidem*, *Coreocarpum*, et *Acomam*].)

Suffruticosae, foliis oppositis, indivisis vel ternatim partitis, coriaceis, lamina segmentisve ovatis vel lanceolatis. Capitula solitaria vel paniculato-corymbosa. Involucri bracteae exteriores circ. 5, plus minusve oblongae; interiores circ. 8, longiores, plus minusve ovato-oblongae. Flores ligulati circ. 5, plerumque 2–3-dentati, ligula oblongi vel elliptici, fertiles, tubo pubescentes. Flores tubulosi limbo raro 4- plerumque 5-dentati, anulo deficiente, tubo pubescenti quam gutture cylindraceo-infundibuliformi brevior; styli ramis apice subulato-appendiculatis. Achaenia valde obcompressa, glabra, marginata, exteriora lata interiora multo angustiora, omnia epapposa vel interiora raro jugo aristarum glabrarum angustarum munita. Plantae mexicanae, centrali-americanae, et haitienses. (Type, *Electra mexicana* DC. = *Coreopsis mutica* var. *leptomera*.)

Sect. II. *Anathysana* Blake, op. cit. 339. Nos. 5–7.

Herbae perennes caulibus pluribus e radice lignea foliis oppositis integris vel pinnatiformibus lobis paucis filiformi-linearibus. Involucrum ut apud Sect. I sed interius 8–12-bracteatum. Flores ligulati fertiles. Flores tubulosi saepius exanulati; styli ramis apice incrassatis breviter appendiculatis. Achaenia ut apud Sect. I, epapposa. Plantae mexicanae (num. 7 ex insula Socorro). (Type, *Leptosyne mexicana* A. Gray = *Coreopsis cyclocarpa*.)

Sect. III. *Tuckermannia* (Nutt.) Blake, loc. cit. 340; pro genere, Nutt. Trans. Amer. Phil. Soc. ser. 2. 7: 363. 1841; pro sect. *Lep-*

tosynei, A. Gray, Bot. Calif. 1: 356. 1876; etiam Syn. Fl. N. Amer. 1, pt. 2: 300. 1884. Nos. 8 and 9.

Perennes, robustae, foliis alternis carnosius 2-3-pinnatim dissectis, capitulis magnis. Involucri bractee subaequales, exteriores 5-8, lanceolato-oblongae; interiores circ. 12, oblongae. Flores ligulati magni, fertiles. Flores tubulosi anulo subglabro circumscripti. Achaenia obcompressa, glabra, anguste alata, epapposa vel raro marginibus in dentes breves vel aristas currentibus aegre papposa. Plantae e California, Baja-California, et proximis insulis Oceani Pacifici. (Type, *Tuckermannia maritima* Nutt.=*Coreopsis maritima*.)

Sect. IV. *Pugiopappus* (A. Gray) Blake, loc. cit.; *Agarista* DC. Prodr. 5: 569. 1836 (nec alior.); pro genere, A. Gray, Pacif. R. Rept. 4: 104. 1857; etiam Proc. Amer. Acad. 8: 659. 1873; pro sect. *Leptosynei* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 300. 1884. Nos. 10 and 11.

Annuae, e basi ramosae, foliis 2-3-pinnatifidis plerumque basilibus, capitulis mediocribus solitariis, pedunculis elongatis subnudis. Involucri bractee exteriores 5-7, interiores circ. 8. Flores ligulati plerumque styliferi ac fertiles, interdum neutri vel cum stylis brevibus inclusis, ligula lati ac multistriati. Flores tubulosi anulati, anulo hirsuto. Achaenia dimorpha; radii epapposa, cortice marginata et ad facies quidem plus minusve costata; disci marginibus longe villosa, apice jugo aristarum lineari-lanceolarum sursum setulosarum munita. Plantae Californiae australis. (Type, *Agarista Calliopsidea* DC.=*Coreopsis Calliopsidea*.)

Sect. V. *Euleptosyne* (A. Gray) Blake, op. cit. 341; pro sect. *Leptosynei* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 299. 1884. Nos. 12 and 13.

Habitu involucroque sect. *Pugiopappo* similis sed bracteis exterioribus linearis. Flores ligulati glabri, fertiles. Flores tubulosi anulati; styli ramis apice incrassatis, breviter appendiculatis. Achaenia phelloptera, apice poculo minuto coronata. Plantae Arizonae, Californiae, et Baja-Californiae borealis. (Type, *Leptosyne Douglasii* DC.=*Coreopsis Douglasii*.)

Sect. VI. *Pseudo-Agarista* A. Gray, Proc. Amer. Acad. 22: 428. 1861; *Epilepis* Benth. Pl. Hartweg. 17. 1839. Nos. 14-40.

Plus minusve fruticosae, foliis saepius decompositis segmentis angustis. Receptaculi paleae cum fructu saepe deciduae, ad hujus faciem anteriorem applicatae, apice saepius eroso-denticulatae. Flores tubulosi exanulati, styli ramis apice plus minusve conicis vel caudato-appendiculatis. Achaenia plus minusve lineari-oblonga,

exalata sed marginibus sursum villosa, apice biaristata aristis linearibus vel lanceolatis antrorsum hispidis. Plantae mexicanae et austro-americanae. (Type, *Coreopsis petrophila*.)

Sect. VII. *Eucoreopsis* Nutt. Trans. Amer. Phil. Soc. n. ser. 7: 357. 1841; *Coreopsoides* Moench, Meth. Pl. 594. 1794; *Anacis* Schrank, Denkschr. Akad. Münch. Math. Nat. 5: 5. 1817; *Leachia* Cass. Dict. Sci. Nat. 25: 388. 1822; *Chrysomelea* Tausch, Hort. Canal. 1823; *Chrysostemma* Less. Syn. Gen. Compos. 227. 1832; sect. *Chrysomelea* (Tausch) Nutt. loc. cit.; sect. *Gyrophyllum* Nutt. op. cit. 358; sect. *Leachia* (Cass.) A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 291. 1884. Nos. 41–91.

Herbae, foliis oppositis integris vel pinnatim partitis plerumque petiolatis. Ligulae plus minusve cuneatae, apice 3–5-lobatae vel -dentatae. Receptaculi paleae basi latae apicem versus attenuato-filiformes. Styli rami apice abrupte cuspidati vel conici. Achaenia fere orbiculata, ad maturitatem incurvata, nonnulla vel omnia demum papillata vel muriculata, saepe ventris apice basique callum (hoc quidem in unico capitulo saepe valde polymorphum) ferentia; pappo 2 dentibus minutis paleaceis vel deficiente. Plantae boreali-americanae et africanae, rarissime (*C. lanceolata*) in Asia. (Type, *Coreopsis coronata* Hook. = *Coreopsis nuecensis*.)

Sect. VIII. *Silphidium* Torr. & Gray ex A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 294. 1884; pro parte sect. *Eucoreopsidis* Torr. & Gray, Fl. N. Amer. 2: 341. 1843. No. 92.

Folia opposita, magna, indivisa, serrata. Ligulae integrae. Styli rami apice ovato-triangulati, breviter mucronati. Achaenia obovato-oblonga, exalata, apice obsolete bidentata. Plantae e Georgia ad Boreali-Carolinam. (Type, *Coreopsis latifolia*.)

Sect. IX. *Calliopsis* (Reichenb.) Nutt. Trans. Amer. Phil. Soc. n. ser. 7: 360. 1841; pro genere, Reichenb. Mag. Aesthet. Bot. No. 70. 1823; etiam DC. Prodr. 5: 568. 1836; *Diplosastera* Tausch, Hort. Canal. 1823; cf. Flora 1: 83. 1824; sect. *Coreoloma* (pro minima parte ex exemplo *C. Leavenworthii*) et subsect. *Calliopsidium* (omnino) Torr. & Gray, op. cit. 346. Nos. 93–100.

Herbae, foliis oppositis raro integris plerumque 1–2-pinnatim divisis lobis integris. Involucrum exterius parvum. Ligulae plerumque bicolores vel quidem rosaceae, apice dentatae. Styli rami apice truncati ac subpenicillati. Achaenia apice calva vel biaristata, alata vel exalata. Plantae boreali-americanae, rarissime ex aliqua parte (*C. lanceolata* et *C. tinctoria*) sinenses. (Type, *Calliopsis bicolor* Reichenb. = *Coreopsis tinctoria*.)

Sect. X. *Eublepharis* Nutt. Trans. Amer. Phil. Soc. n. ser. 7: 359. 1841; sect. *Rabdocaulis* Nutt. loc. cit.; sect. *Coreoloma* Torr. & Gray, Fl. N. Amer. 2: 346. 1843 (exclud. *C. Leavenworthii*); sect. *Cosmella* Torr. & Gray, op. cit. 348 (exclud. *C. roseam*). Nos. 101–111.

Herbae, foliis oppositis vel alternis, plerumque integris. Ligulae flavae vel rosaceae, dentatae. Flores disci atro-purpurei vel flavi. Styli rami truncati vel obtuse conici. Achaenia alata alis fimbriatis vel pectinato-dissectis. Plantae boreali-americanae praesertim e parte austro-orientali. (Type, *Coreopsis gladiata*.)

Sect. XI. *Euprestinaria* Schz. Bip. in Walp. Repert. 6: 163. 1846. Nos. 112–114.

Herbae annuae vel perennes. Florum tubulosorum tubus glaber, styli ramis apice cono hispido superatis. Achaeniorum oblongorum vel oblongo-lanceolatorum aristae paleaceae lanceolato-lineares utrinque ciliis adrectis hispidae. Plantae africanae praesertim abyssinicae. (Type, *Coreopsis Prestinaria*.)

CLAVIS

- a. Plantae boreali-americanae antillanaeque.
 - b. Flores ligulati fertiles.
 - c. Herbae annuae.
 - d. Disci achaenia exaristata, phelloptera.
 - e. Achaenia setis clavellatis numerosis obsita.
 12. *C. Douglasii*.
 - e. Achaenia non clavellato-setosa. 13. *C. Stillmanii*.
 - d. Disci achaenia biaristata, longe ciliata.
 - e. Involucri bractee exteriores lineares. . 10. *C. Bigelovii*.
 - e. Involucri bractee exteriores late ovatae.
 11. *C. Calliopsidea*.
 - c. Herbae perennes vel frutices.
 - d. Folia simplicia vel ternatisecta, lamina vel foliolis subanguste lanceolatis vel latoribus.
 - e. Capitula numerosa cymoso-paniculata; foliis vel foliolis nunc plus minusve lanceolatis nunc oblongo-ovatis.
 1. *C. mutica*.
 - e. Capitula pauca vel solitaria; foliis simplicibus.
 - f. Folia 2–6 cm. longa.
 - g. Folia cuneate oblanceolata vel obovata.
 2. *C. cuneifolia*.

- g. Folia anguste lanceolato-oblonga . . . 4. *C. Buchii*.
- f. Folia 1–2 cm. longa, ovalia 3. *C. parvifolia*.
- d. Folia vel segmenta linearia vel angustiora.
- e. Folia integra vel raro lateraliter 2-lobata, 2–6 cm. longa.
 - 5. *C. cyclocarpa*.
- e. Folia principalia pinnatim lobata.
- f. Flores ligulati usque ad 11 mm. longi.
 - g. Involucrum circ. 6–8 mm. altum, foliorum lobis lateralibus plerumque 3 jugis . . 6. *C. pinnatisecta*.
 - g. Involucrum circ. 4–5 mm. altum, foliorum lobis lateralibus saepius 1 jugo 7. *C. insularis*.
- f. Flores ligulati saltem 2 cm. longi.
 - g. Pedunculi dispersi, plerumque 1.5–4 dm. longi.
 - 8. *C. maritima*.
 - g. Pedunculi corymbose congregati plerumque 1–2 (saepius usque ad 1.5) dm. longi . . 9. *C. gigantea*.
- b. Flores ligulati steriles.
- c. Fruticosae.
 - d. Achaenia glabra apice calva 51. *C. cordylocarpa*.
 - d. Achaenia ciliata, biaristata.
 - e. Folia simplicia 15. *C. petrophiloides*.
 - e. Folia 1–3-pinnatisecta.
 - f. Involucri bracteae interiores 5–6 mm. longae.
 - 14. *C. petrophila*.
 - f. Involucri bracteae interiores 6–9 mm. longae.
 - g. Plantae glabrae vel foliis vix pilosiusculae.
 - h. Foliorum segmenta ultima 0.6–0.8 mm. lata; involucri bracteis exterioribus lineari-oblongis.
 - 18. *C. Pringlei*.
 - h. Foliorum segmenta ultima 1–5 mm. lata; involucri bracteis exterioribus linearibus.
 - 17. *C. rhyacophila*.
 - g. Plantae hispidae 19. *C. rudis*.
 - c. Herbaceae.¹
 - d. Stylorum rami termino acuti vel cuspidati.

¹For convenience in making comparisons, the plants under *c* are keyed as closely as feasible according to the characters utilized by F. E. Boynton in his treatment of the species of *Coreopsis* in the southeastern United States (J. K. Small, Fl. S. E. United States 1274. 1903).

- e. Achaeniorum alae dissecte fimbriato-pectinatae.
101. *C. saxicola*.
- e. Achaeniorum alae angustae vel latae, integrae (interdum fractae vel scissae) vel (*C. congregata*) supra quidem rotundo-lobatae sed numquam fimbriato-pectinatae.
- f. Foliorum laminae vel segmenta margine integra.
- g. Stylorum rami termino cuspidati; paleis basi latis superne attenuato-filiformibus; foliorum laminis simplicibus vel pinnatim lobatis.
- h. Perennes; ligulis omnino flavis.
 - i. Achaenia alata alis patulis vel minime incurvatis.
 - j. Achaeniorum corpora (alis exclusis) circ. 2 mm. longa et circ. 1 mm. lata. 43. *C. debilis*.
 - j. Achaeniorum corpora (alis exclusis) 2.5–3.2 mm. longa et saltem 1.4–2 mm. lata.
 - k. Caules basim versus foliosi, gerentes ramos longos nudos pedunculoideos.
 - l. Involucri bracteae exteriores angustissime lineares, 5–11 mm. longae.
46. *C. heterolepis*.
 - l. Involucri bracteae exteriores lanceolatae vel oblongo-lineares vel oblongo-ovatae, 3–8 mm. longae.
 - m. Folia petiolis inclusis plerumque 3–8 cm. longa, involucri bracteis exterioribus 3–5 mm. longis.
42. *C. corninsularis*.
 - m. Folia petiolis inclusis plerumque usque ad 1.5 dm. longis, involucri bracteis exterioribus 4–8 mm. longis.
41. *C. lanceolata*.
- k. Caules fere usque ad summam foliosi; pedunculis moderate brevibus.
- l. Foliorum laminae latae, simplices vel lateraliter 1–5-lobatae.
- m. Involucri bracteae subaequales 7–10 mm. longae. 45. *C. pubescens*.

- m. Involucri bractae exteriores 4-7
 (raro -8) mm. interiores 12-14 mm.
 longae.....44. *C. intermedia*.
 l. Foliorum laminae in segmenta angusta
 pinnatim partitae...47. *C. grandiflora*.
 i. Achaenia alata alis valde incurvatis integris
 demum calloso-incrassatis...48. *C. auriculata*.
 h. Annuae.
 i. Ligulae discolores.....50. *C. nuecensis*.
 i. Ligulae omnino flavae.....49. *C. congregata*.
 g. Styli rami termino acute conici; paleis linearibus
 vel termino vix dilatatis; foliorum laminis
 plerumque palmato-lobatis vel -divisis (pro *C.*
major var. *Oemleri* simplicibus).
 h. Foliorum laminae petiolatae...91. *C. tripteris*.
 h. Foliorum laminae sessiles.
 i. Foliorum laminae infra medium non vel parce
 sectae.....86. *C. palmata*.
 i. Foliorum laminae usque ad basim partitae.
 j. Flores tubulosi corollis flavi.
 k. Foliorum segmenta filiformia vel lineari-
 filiformia 0.3-1 mm. lata.
 87. *C. verticillata*.
 k. Foliorum segmenta latiora...90. *C. major*.
 j. Flores tubulosi corollis purpureo-brunnei.
 k. Foliorum principalium segmenta pauca,
 plerumque 1.5-3.5 mm. lata; internodiis
 quam foliis saepius longioribus.
 89. *C. Delphinifolia*.
 k. Foliorum principalium segmenta numero-
 sa, 0.5-1.5 mm. latis; internodiis quam
 foliis plerumque brevioribus.
 88. *C. pulchra*.
 f. Foliorum laminae regulariter dentatae.
 92. *C. latifolia*.
 d. Styli rami termino truncati vel obtuse conici.
 e. Achaenia exalata.
 f. Ligulae basi rubro-brunneae alibi flavae; disci floribus
 corolla atro-rubris.

- g. Involucri bractee exteriores quam interiores multo breviores; achaeniis anguste oblongis, tenuibus, subplanis.....93. *C. tinctoria*.
- g. Involucri bractee exteriores quam interiores non plerumque breviores; achaenia obovata, crassa, convexa.....94. *C. basalis*.
- f. Ligulae roseae; disci floribus corolla flavis.
95. *C. rosea*.
- e. Achaenia alata.
- f. Achaeniorum alae integrae.
- g. Achaenia apice calva vel minute dentata.
- h. Ligulae discolores.
 - i. Achaenia circ. 2 mm. longa, anguste vel late alata.....96. *C. Cardaminefolia*.
 - i. Achaenia 2.4–2.8 mm. longa, angustissime alata (vel interdum tantum marginata).
99. *C. Atkinsoniana*.
 - h. Ligulae omnino flavae.....97. *C. stenophylla*.
- g. Achaenia perspicue aristata aristis interdum in maturitate deciduis.
- h. Ligulae discolores (specie texana)..98. *C. similis*.
- h. Ligulae omnino flavae (specie floridana).
100. *C. Leavenworthii*.
- f. Achaeniorum alae dissecte fimbriato-pectinatae.
- g. Folia non juncoidea; ligulis flavis.
- h. Foliorum majorum laminae plus minusve oblongae vel lanceolatae.
 - i. Folia inferiora quam internodia breviora vel paulo longiora, opposita..103. *C. Linifolia*.
 - i. Folia inferiora quam internodia multo longiora.
 - j. Foliorum imorum laminae lineares vel lanceolatae, apice plerumque mucronatae.
 - k. Foliorum laminae simplices integraeque; achaeniis elliptico-oblongis, circ. 4 mm. longis, ala quam corpore multo angustiore.....104. *C. longifolia*.
 - k. Foliorum laminae saepe lobatae; achaeniis anguste oblongis, circ. 5 mm. longis, ala corpori latitudine aequali.
105. *C. falcata*.

- j. Foliorum imorum laminae oblongae vel ellipticae, apice obtusae... 106. *C. gladiata*.
- h. Foliorum majorum laminae plus minusve ovatae.
- i. Folia opposita; petiolis (ac laminis juvenilibus) ciliatis..... 108. *C. integrifolia*.
- i. Folia alterna; petiolis (ac laminis quidem juvenilibus) eciliatis... 107. *C. Helianthoides*.
- g. Folia juncoidea, laminis veris deficientibus; ligulis rosaceis..... 109. *C. nudata*.
- a. Plantae austro-americanae.
- b. Folia indivisa.
- c. Folia 0.5–2 cm. lata.
- d. Folia oblanceolata, 0.5–1.5 cm. lata.
- e. Folia integra, 5–7.5 mm. lata..... 25. *C. oblanceolata*.
- e. Folia supra medium acriter paucidentata, 0.8–1.5 cm. lata..... 25a. *C. Woytkowskii*.
- d. Folia anguste ovato-lanceolata, 1–2 cm. lata. 16. *C. Irmscheriana*.
- c. Folia angustiora.
- d. Folia lineari-flagellaria tantum 0.5–1 mm. lata, totam longitudinem aequaliter angusta..... 26. *C. longula*.
- d. Folia angustissime spathulato-lineararia, 1–2 mm. lata. 27. *C. venusta*.
- b. Folia divisa.
- c. Folia primaria minuta, tantum 7–9.5 mm. longa.
- d. Folia cum fasciculis axillaribus, quam internodia plerumque paulo breviora; involucri bracteis exterioribus biserialibus circ. 18..... 29. *C. senaria*.
- d. Folia sine fasciculis axillaribus, quam internodia saltem duplo longiora; involucri bracteis exterioribus uniseri- alibus circ. 8..... 28. *C. nodosa*.
- c. Folia primaria majora.
- d. Capitula pansa ad anthesin circ. 1.1–2 cm. lata; foliorum laminis vel segmentis 1.5–4 mm. latis.
- e. Partes novellae glaucescentes; involucri bracteis exte- rioribus linearibus quam interioribus dimidio breviori- bus..... 20. *C. glaucodes*.
- e. Nullae partes glaucescentes.

- f. Involucri bracteae exteriores minutae, longitudine tantum circa tertiae interiorum.
- g. Involucri bracteae exteriores ovatae; foliorum segmentis lateralibus cuneatis vel elliptico-obovatis vel spathulatis, 2–6 mm. latis . . . 21. *C. microlepis*.
- g. Involucri bracteae exteriores lineari-oblongae; foliorum segmentis lateralibus anguste linearibus, 1–1.7 mm. latis . . . 22. *C. Macbridei*.
- f. Involucri bracteae exteriores lineari-oblongae, quam interiores dimidio breviores . . . 24. *C. parviceps*.
- d. Capitula pansa ad anthesin 2.2–5 cm. lata.
 - e. Folia densissime congregata, ramis fere abditis.
 - f. Foliorum segmenta lineari-oblongeolata, apicaliter subobtusata; involucri bracteis exterioribus circ. 8, oblongis, apice rotundatis, circ. 5 mm. longis et 1.5 mm. latis, uniseriatim dispositis . . . 30. *C. foliosa*.
 - f. Foliorum segmenta lineari-subulata, apicaliter acuta; involucri bracteis exterioribus circ. 11, ovatis, circ. 6 mm. longis et 3.3–4.8 mm. latis, biseriatim dispositis . . . 31. *C. polyactis*.
 - e. Folia plerumque laxius (*C. trilobae* interdum dense) disposita, ramis plus minusve manifestis.
 - f. Foliorum segmenta ultima lanceolata vel oblonga; involucri 6 bracteis exterioribus 2–3 mm. longis et 1–1.6 mm. latis . . . 32. *C. notha*.
 - f. Foliorum segmenta ultima angustiora.
 - g. Foliorum triloborum segmenta ultima flagellaria, apicaliter acuta, 1–3.5 cm. longa et plerumque 0.3–0.6 mm. lata.
 - h. Folia laxissime patentia vel etiam subreflexa.
 - 33. *C. capillacea*.
 - h. Folia dense adgregata, suberecta . . . 34. *C. triloba*.
 - g. Foliorum segmenta ultima diversa.
 - h. Involucra glaberrima . . . 35. *C. spectabilis*.
 - h. Involucra (saltem infra) hispida.
 - i. Rami foliaque hinc illinc resinosa, suaveolentia.
 - 36. *C. suaveolens*.
 - i. Rami foliaque diversa (petiolis raro inferne resinosis).

- j. Involucri bracteae exteriores biseriales, circ. 16.....38. *C. imbricata*.
 - j. Involucri bracteae exteriores uniseriales, multo pauciores.
 - k. Foliorum primariorum multa 2.5–4.5 cm. longa.
 - l. *Achaenia villosa*-ciliata dorso sub palea. glabra sed ad ventrem villosissima. 37. *C. Pickeringii*.
 - l. *Achaenia villosa*-ciliata sed faciebus glabra.....39. *C. Townsendii*.
 - k. Folia primaria 1–2.5 cm. longa.
 - l. Internodia superiora multo folia superantia, ligulis siccis brunneo-flavis. 23. *C. Killipii*.
 - l. Internodia superiora non vel moderate folia superantia, ligulis siccis claro- vel subclaro-flavis.....40. *C. fasciculata*.
- a. Plantae africanae.
 - b. *Achaenia* valde obcompressa, marginibus saepissime tenuia alatae.
 - c. Aristae achaeniorum filiformes ac corporibus breviores, vel deficientes.
 - d. Plantae annuae (vel verisimiliter annuae).
 - e. Folia superne hispida.
 - f. *Achaenia* (alis inclusis) circ. 2–3.5 mm. lata.
 - g. Involucri bracteae exteriores 6–11 mm. longae.
 - h. Flores ligulati circ. 2.5–3 cm. longi. 76. *C. oligoflora* (vide etiam 72. *C. multifloram*).
 - h. Flores ligulati circ. 1–2 cm. longi...79. *C. vulgaris*.
 - g. Involucri bracteae exteriores 3–6 mm. longae.
 - h. Capitula numerosa, ad anthesin circ. 2.5–3.3 cm. lata, demum cum achaeniis maturis ± 1.2 cm. alta et plerumque paulo angustiora, achaeniorum corporibus plerumque 7–10 mm. longis, aristis perspicue densissimeque erecto-hispidis supra paleas valde manifestis. 80. *C. Giorgii* (vide etiam 78. *C. Goffardii*).

- h. Capitula pauca, ad anthesin ± 4 cm. lata, demum cum achaeniis maturis sub 1 cm. alta et ± 1.3 cm. lata, achaeniorum corporibus 3.5–6 mm. longis, aristis minutissimis ac non supra paleas manifestis.....77. *C. Quarrei*.
- h. Capitula subnumerosa, ad anthesin circ. 4–4.5 cm. lata, demum cum achaeniis maturis circ. 1 cm. alta et parce latiora, achaeniorum corporibus 4.5–6.5 mm. longis, aristis in paleis subabditis.....82. *C. injucunda*.
- f. Achaenia (alis inclusis) 4–5 mm. lata.
81. *C. Mattfeldii*.
- e. Folia superne glabra vel glabrata.
- f. Achaenia exaristata.....56. *C. Negriana*.
- f. Achaenia biaristata.
- g. Foliorum caulinarum saepius 2–3-pinnatisectorum segmenta anguste linearia; capitulis pansis ad anthesin 2.5–5 cm. latis.
- h. Foliorum segmenta plerumque circ. 1 mm. lata; involucri hispido.....71. *C. leptoglossa*.
- h. Foliorum segmenta plerumque 2–4 mm. lata; involucri glabrato vel subglabrato.
69. *C. Feruloides*.
- g. Foliorum 2-pinnatisectorum segmenta principalia oblongo-lanceolata; capitulis pansis ad anthesin 2.5–4 cm. latis.
61. *C. Prestinariaeformis* var. β *incisa*.
- g. Foliorum caulinarum indivisorum laminae vel 3–5-partitorum segmenta late linearia; capitulis pansis ad anthesin 5–7 cm. latis.....83. *C. Borianiana*.
- g. Foliorum 3–5-lobatorum foliola ovata vel ovato-sublanceolata.....61. *C. Prestinariaeformis*.
- d. Plantae perennes (vel verisimiliter perennes).
- e. Foliorum principalium laminae vel segmenta lanceolata vel latiora.
- f. Foliorum segmenta dentata dentibus perspicue elongatis (saepe 1–1.5 cm. longis)...110. *C. Mildbraedii*.
- f. Foliorum laminae vel segmenta diversa.
- g. Folia indivisa.

- h. Folia scabra, saepius 10–16 cm. longa; involucro hispido.....85. *C. scabrifolia*.
 - h. Folia glabra, 1.5–5 cm. longa; involucro glabro.
62. *C. Barteri*.
 - g. Folia divisa.
 - h. Achaenia exaristata.
 - i. Folia plerumque pinnata vel pinnatifida segmentis principalibus saepius late oblongo-lanceolatis vel ovatis, inter se saepe propinquis, supra scaberulis subtus tomentellis.
 - j. Caulis primo tomentellus mox glabratus.
66. *C. Whytei*.
 - j. Caulis perpetuo tomentellus.
65. *C. pinnatipartita*.
 - i. Folia 2–3-pinnatisecta, foliolis vel segmentis principalibus saepius anguste oblongo-lanceolatis, glabris.....67. *C. Lupulina*.
 - h. Achaenia biaristata.
 - i. Capitula pansa ad anthesin 5.5–9 cm. lata.
 - j. Folia pubescentia.
73. *C. bella* (vide etiam..72. *C. multifloram*).
 - j. Folia faciebus glabra.....84. *C. togensis*.
 - i. Capitula pansa ad anthesin usque ad 4 cm. lata.
 - j. Folia molliter denseque pubescentia; achae-
niis plumbeo-nigris minutis corpore tantum
3–4 mm. longis.....68. *C. Neumannii*.
 - j. Folia glabra vel subglabra.
 - k. Pauca folia divisa.....62. *C. Barteri*.
 - k. Folia plerumque divisa.
 - l. Involucrum moderate vel valde hispidum.
 - m. Involucrum moderate adpresso-hispidum; pedunculo tenui glabratoque; floribus tubulosis extrinsecus glabris.....75. *C. exilis*.
 - m. Involucrum valde hispidum; pedunculo subrobusto hispidoque; floribus tubulosis inferne pilosis.
64. *C. oblonga*.
 - l. Involucrum non nisi basi hispidum.

- c. *Aristae achaeniorum subulatae*.
- d. *Herbae annuae*.
 - e. *Involucri bractee interiores glabrae*. 112. *C. Prestinaria*.
 - e. *Involucri bractee interiores pilis subplanis obtectae*.
 - 61. *C. Prestinariaeformis* et var. β *incisa*.
 - d. *Herbae perennes*. 113. *C. macrantha*.
- b. *Achaenia tantum moderate vel aegre obcompressa*.
 - c. *Achaenia exaristata*; foliis indivisis spathulato-oblanceolatis.
 - 55. *C. Jacksonii*.
 - c. *Achaenia biaristata* aristis lanceolato-subulatis; foliis bipinnatifidis. 114. *C. pachyloma* et var. β *inanis*.

ABBREVIATIONS USED FOR HERBARIA CITED

Berl.	Herb. Berlin Botanical Garden, Berlin-Dahlem.
Boiss.	Herb. Boissier, Geneva.
Brit.	Herb. British Museum of Natural History, South Kensington.
Bruss.	Herb. National Botanical Garden, Brussels.
Calif.	Herb. University of California, Berkeley.
Del.	Herb. Delessert, Geneva.
Field	Herb. Field Museum of Natural History, Chicago.
Flor.	Herb. Institute of Botany, University of Florence, Italy.
Gray	Herb. Gray, Harvard University, Cambridge, Massachusetts.
Hamb.	Herb. Hamburg Botanical Garden, Germany.
Kew	Herb. Royal Botanic Gardens, Kew.
Linn.	Herb. Linnaeus, Linnaean Society, London.
Mo.	Herb. Missouri Botanical Garden, St. Louis.
Mun.	Herb. Munich Botanical Garden, Germany.
Mus. Cong.	Herb. Musei Congoensis, Tervueren, Belgium. (Recently merged with the Herbarium of the National Botanical Garden, Brussels.)
Mus. V.	Herb. Museum of Natural History, Vienna.
N. Eng.	Herb. New England Botanical Club, Cambridge, Massachusetts.
N. Y.	Herb. New York Botanical Garden, New York City.

Oxf.	Herb. University of Oxford, Oxford.
Par.	Herb. Museum of Natural History, Paris.
Phila.	Herb. Philadelphia Academy of Natural Sciences, Philadelphia.
Pom.	Herb. Pomona College, Claremont, California.
Stanf.	Herb. Stanford University, California.
Stockh.	Herb. National Natural History Museum, Stock- holm.
U. S.	Herb. United States National Museum, Wash- ington.
U. V.	Herb. University of Vienna, Austria.

1. *Coreopsis mutica* DC. Prodr. 5: 571. 1836. *Electra Galeottii* A. Gray, Pl. Wright. 110. 1852. *C. Galeottii* (A. Gray) Hemsl. Biol. Centr. Amer. Bot. 2: 195. 1881. *C. mutica* var. *genuina* Blake, Proc. Amer. Acad. 52: 55. 1917.

Foliorum segmenta vel laminae tenuiter lanceolatae vel etiam lineari-lanceolatae var. γ *leptomera*.

Foliorum segmenta vel laminae latiores.

Folia petiolis adjectis tantum circ. 2.5–4 cm. longa.

var. δ *holotricha*.

Folia 4–17 cm. longa.

Folia utrinque glabrata *C. mutica* sensu stricto.

Folia infra dense pubescentia var. β *subvillosa*.

Fruticosa, plus minusve glabra, 0.3–1.3 (etiam usque ad 2) m. alta. Folia petiolata petiolis anguste alatis 0.6–3 cm. longis, petiolo adjecto 4–17 cm. longa, simplicia vel trisecta vel saepe tripartita, lamina segmentisve oblonge lato-lanceolatis vel lanceolato-ovatis (terminali apice saepe acuminato) utrinque glabratis vel inferne praecipue ad venas sparsim hispidis, acriter serratis, superne saepe subcoriaceis. Capitula paniculato-corymbosa, nunc pauca (5–15 pro unica inflorescentia) nunc numerosa (usque ad circ. 60), tenuiter pedicellata pedicellis saepe glabris 1–4 cm. longis, radiata, pansa ad anthesin 2–5 cm. lata et 8–17 mm. alta. Involucrum saepe glaberrimum, bracteis exterioribus circ. 5, nunc oblongis nunc late angusteve spathulato-oblonge, apice plus minusve mucronatis, 5–12 mm. longis, quam interioribus ovato-oblongis vel rotundato-ovatis demum saepe dimidio brevioribus. Flores ligulati circ. 5, lutei, fertiles, ligula oblongi, tubo pilosi, apice 2–4-denticulati, 1–2 cm. longi. Paleae glabrae, oblongo-lineares. Florum tubulorum

stylorum rami apice subulati hispidique. Achaenia valde obcompressa, corpore nigra alis stramineo-brunnea, exteriora late oblanceolata alia angustiora, glaberrima, 6–13 mm. longa et 1–3 mm. lata, apice emarginato calva vel interiora rarissime biaristata.

Type specimen: Collected by *F. W. Keerl* at Tlapujahua (Tlapacoya), northern Puebla, Mexico (Bruss.). DeCandolle cited Martius' herbarium for his type specimen, but a good-sized and representative fragment is in DeCandolle's *Prodromus Herbarium* (Del.).

Distribution: State of Hidalgo, Mexico, southeastwardly through Oaxaca and Chiapas into Guatemala.

Specimens examined: *Baites*, Mexico, 1864 (Gray); *Gust. Bernoulli* 196, in thickets, Baño de los Padres, Guatemala, November, 1865 (N.Y.); *Cassiano Conzattii* 1431, alt. 1,650 meters, Cerro San Antonio, State of Oaxaca, Mexico, June 26, 1906 (Gray); *Ehrenberg* 354 pro parte, Mexico (Pom.); *Galeotti* 2086, Cordilleras of Mexico (Gray, fragment; one of two types of *Electra Galeottii* A. Gray); *Giesbreght* 133, State of Chiapas, Mexico (Gray); *idem* 539, growing 5–6 ft., cold and temperate region, November, 1864–1870 (Gray; Mo.); *Sutton Hayes*, large shrub, near Amatitlán, Department of Amatitlán, Guatemala, July 20, 1860 (Gray); *Heyde & Lux* 3792, alt. 2,400 meters, Laguna de Ayarza, Department of Jalapa, Guatemala, 1892 (Berl.; Gray; N.Y.); *E. W. D. Holway* 5, alt. 1,500 meters, Guatemala City, Guatemala, January 1, 1915 (Gray); *idem* 52, alt. 2,100 meters, San Rafael, Department of Guatemala, Guatemala, January 9, 1915 (Gray); *idem* 154, alt. about 1,950 meters, Sololá, Guatemala, January 30, 1915 (Gray); *idem* 613, Guatemala City, December 21, 1916 (Gray); *W. A. Kellerman* 6296, alt. 1,465 meters, San Rafael, Department of Guatemala, Guatemala, February 3, 1907 (Field); *C. G. Pringle* 8218, alt. 2,850 meters, Sierra de Pachuca, State of Hidalgo, Mexico, September 14, 1899 (Berl.; Field; Gray; Mo.; N.Y.; Pom.); *idem* 13041, alt. 2,490 meters, dry, calcareous bluffs near Metepec Station, State of Hidalgo, September 20, 1904 (Berl.; Field; Gray); *C. A. Purpus* 1550, sunny, rocky slopes, Pachuca, State of Hidalgo, September, 1905 (Field; Gray; Mo.; N.Y.); *J. N. Rose, J. H. Painter, & J. S. Rose* 8837, near Tulancingo, State of Hidalgo, July 22, 1905 (Gray; Mo.; N.Y.; U.S.); *Osbert Salvin*, alt. 1,590 meters, Volcán del Fuego, Guatemala, August, 1873 (Berl.); *H. Von Tuerckheim II.* 2043, alt. 1,400 meters, San Cristóbal, Department of Alta Verapaz, Guatemala, December, 1907 (Field, 2 sheets; Gray; Mo.; N.Y.).

Gray wrote, concerning material referred here to this one species (Pl. Wright. 110. 1852): "We appear to have two species, which, however, are not as well marked as could be desired, viz.: 1. *Electra Mexicana* 2. *E. Galeottii*." Gray's use of "foliis lato-lanceolatis" for *Electra mexicana* indicates that he mistook simple, broad-leaved forms of *Coreopsis mutica* (*E. Galeottii*) for DeCandolle's *Electra mexicana*, which latter had narrow leaves and would best be designated today as a variety (vide *C. mutica* var. γ *leptomera*, infra).

***Coreopsis mutica* var. β *subvillosa* DC. Prodr. 5: 571. 1836. *C. mexicana* var. *hyperdasys* Blake, Proc. Amer. Acad. 49: 338. 1913.**

Folia infra ubique dense pubescentia, supra venis exceptis glabrata vel scabriuscula, caulibus et gemmis et inflorescentia piloso-tomentosis lente subglabratiss.

Type specimen: Collected by *Wilhelm Friedrich von Karwinski* in Mexico (Mun.).

Distribution: State of Hidalgo and southeastwardly through Puebla into State of Oaxaca, Mexico.

Specimens examined: *C. Conzatti* 1955, alt. 1,700 meters, Alturas de San Pablo Hintzo, State of Oaxaca, August 25, 1907 (Field); *idem* 2074, alt. 1,900 meters, Las Sedas, State of Oaxaca, October 20, 1907 (Field); *idem* & *V. González* 545 et 546, alt. 2,000 meters, Cerro de San Felipe, State of Oaxaca, September 1, 1897 (Gray); *Ehrenberg* 354 pro parte, between Mineral del Monte and Pachuca, State of Hidalgo (Berl., 2 sheets); *E. W. Nelson* 1718, alt. 1,800–2,250 meters, near Reyes, State of Oaxaca, October 17, 1894 (Gray); *Nicolás*, State of Puebla, October, 1905 (Field); *C. G. Pringle* 4896, alt. 1,800 meters, ravines of hills near City of Oaxaca, State of Oaxaca, September, 1894 (Field; Gray, 2 sheets; Mo.; N.Y.; Pom.; U.S.); *Charles L. Smith*, alt. 2,100–2,400 meters, Sierra de San Felipe, State of Oaxaca, October 11, 1894 (Mo.; N.Y.); *Lucius C. Smith* 25, San Juan del Estado, State of Oaxaca, June 18, 1894 (Gray); *idem* 808, alt. 2,130 meters, La Carbonera, State of Oaxaca, September 20, 1895 (Gray).

***Coreopsis mutica* var. γ *leptomera* Sherff, Bot. Gaz. 88: 300. 1929. *Electra mexicana* DC. Prodr. 5: 630. 1836. *C. mexicana* (DC.) Hemsl. Biol. Centr. Amer. Bot. 2: 196. 1881. *C. chrysantha* Sessé & Moc. Fl. Mex. ed. 2. 194. 1894 (non alior.). *Silphium ternatum* Sessé & Moc. op. cit., 195.**

Glabrata; e specie foliorum glabrorum laminis vel segmentis tenuiter lanceolatis vel etiam lineari-lanceolatis differt.

Type specimen: Collected by *Cyrus Guernsey Pringle*, No. 9895, at altitude of 2,040 meters, clay banks, Dublán, State of Hidalgo, Mexico, October 15, 1902 (Field).

Distribution: State of Guanajuato eastwardly through Querétaro into State of Hidalgo and thence southward into Federal District, Mexico.

Specimens examined: commun. *Alfredo Dugès* sub num. 472, Guanajuato, State of Guanajuato, 1895 (Gray); *Hort. Hulier* 8, December 5, 1866 and 101, January 9, 1867 (N.Y.); *Méndez*, about Villalpando beyond City of Guanajuato, State of Guanajuato (Gray; cotype of *Electra mexicana* DC.); *Pringle* 9895 (type, Field; cotypes, Berl.; Gray; Mo.; N.Y.; U.S.); *idem* 13547, growing 5 to 6 feet high at alt. 2,550 meters, barranca above Santa Fe, Federal District, September 1, 1905 (U.S.); *C. A. Purpus* 1339, Ixmiquilpán, State of Hidalgo, September, 1908 (Berl.); *J. N. Rose, J. H. Painter, & J. S. Rose* 9717, near Cadereyta, State of Querétaro, August 22, 1905 (Gray; N.Y.; U.S.); *Uhde* 627, Mexico.

DeCandolle's *Electra mexicana* came from Villalpando, near the City of Guanajuato, and was a form with simple, narrow leaf blades. The specimen sent by Dugès from the same general locality had mainly tripartite leaves, a distinction of no diagnostic value in this species, and, what was indeed significant, the segments were likewise narrow. A study of these and other collections shows that the form with narrow leaf blades or leaflets constitutes a rather well-marked variety occupying a range of greater western but lesser southern extent than does the species proper.

Coreopsis mutica var. δ *holotricha* Blake, Proc. Amer. Acad. 52: 55. 1917. *C. mexicana* var. *hyperdasys* f. *holotricha* Blake, op. cit. 49: 338. 1913.

Folia parva circ. 2.5–4 cm. longa, utrinque cinerea pube densa subscabra.

Type specimen: Collected by *Carl Albert Purpus*, No. 3099, vicinity of San Luis Tultitlanapa, State of Puebla, Mexico (Gray).

Distribution: Known only from type locality in State of Puebla, Mexico.

Specimens examined: *Purpus* 3099 (type, Gray; cotypes, Berl.; Field; Mo.; U.S.).

2. *Coreopsis cuneifolia* Greenm., Proc. Amer. Acad. 40: 43. 1904.

Fruticosa, verisimiliter 5–9 dm. alta, caulibus rubris griseisve aegre angulatis, ramulis primo antrorsum subadpresso-pubescentibus demum nodis exceptis glabratiss. Folia sessilia vel subpetiolata, simplicia, cuneata vel oblanceolato-cuneata, dimidio superiore dentibus patentibus mucronatisque paucidentata, infra medium sensim cuneateque usque ad basim angustata, utrinque glabra vel infra parce pubescentia, glandulo-punctata, 1.5–5 cm. longa et 0.6–2 cm. lata. Capitula solitaria vel paniculato-cymosa pedunculis tenuibus saepe 1–2 dm. longis, radiata, pansa ad anthesin 1–2.5 cm. lata et 8–11 mm. alta. Involucri glabri bracteae exteriores circ. 5, lineari-oblongi, adpressae vel parce patentes, 2–5 mm. longae; interiores oblongo-ovatae, 5–8 mm. longae. Flores ligulati 5 vel 6, fertiles, flavi, ligula late oblongi vel cuneato-obcordati, apice nunc vix nunc profunde dentati, 0.6–1.3 cm. longi, tubo brevi parce pubescenti. Paleae glabrae, apice obtusae. Florum tubulosorum (circ. 12) stylorum rami terminaliter angustato-appendiculati. Achaenia valde obcompressa, circumambitu naviculoidea, glaberrima, 7–10 mm. longa et 3–4 mm. lata, fusca vel alis viridi-brunnea, nitida, apice emarginato calva.

Type specimen: Collected by *Joseph Nelson Rose*, No. 2344, State of Durango, Mexico, August 16, 1897 (Gray).

Distribution: State of Durango southward into State of Jalisco, Mexico.

Specimens examined: *C. R. Barnes & W. J. G. Land 165*, alt. 1,680 meters, Sierra de San Esteban, State of Jalisco, September 28, 1908 (Field); *idem 313*, alt. 1,800 meters, dry hills along road to Santo Domingo Mine, Etzatlán, State of Jalisco, October 6, 1908 (Berl.; Field); *C. G. Pringle 8781*, dry, rocky mountains above Etzatlán, State of Jalisco, October 2, 1903 (Field; Gray; N.Y.); *idem 11900*, alt. 1,800 meters, Sierra de San Esteban, near Guadalajara, State of Jalisco, October 21, 1903 (Berl.; Field; Gray); *Rose 2344* (type, Gray; cotype, U.S.).

3. *Coreopsis parvifolia* Blake, Proc. Amer. Acad. 49: 338. 1913.

Fruticosa, juventate adpresse pubescens denique glabrata, verisimiliter 5–9 dm. alta. Folia subpetiolata, rigida, parva, tantum circ. 1–2 cm. longa, ovalia, supra adpresse pubescentia infra paulum crinita vel glabrata, supra partem inferiorem integram late cuneatam utroque circ. 5-mucronato-dentata, summa imminuta subintegra. Capitula solitaria ramos elongatos superne subnudos terminantia, radiata, pansa ad anthesin 2.5–3 cm. lata et 1–1.5 cm. alta. Involu-

cri bracteae exteriores circ. 5, subcrinitae, oblongo-spathulatae, obtusae, 4–6 mm. longae; interiores oblongo-ovatae, obtusae, apice fimbriatae, 8–11 mm. longae. Flores ligulati circ. 5, lutei, ligula ovaes vel oblongi, apice denticulati, circ. 1.2–1.5 cm. longi. Paleae lineari-oblongae, nitidae. Flores tubulosi 4-dentati, stylorum ramis apice tenuiter hispidocaudatis. Achaenia immatura plana, oblanceolata, nitida, alato-marginata, glaberrima, apice calvo emarginata, 8 mm. longa et 2.2 mm. lata.

Type specimen: Collected by *Carl Albert Purpus*, No. 2581, on dry, rocky hillsides, Esperanza, State of Puebla, Mexico, August, 1907 (Gray).

Distribution: Known only from type locality in State of Puebla, Mexico.

Specimens examined: *Purpus 2581* (type, Gray; cotypes, Field; U.S.); *idem 2581a*, eodem loco, October, 1911 (Berl.).

4. *Coreopsis Buchii* (Urb.) Blake, Contr. U. S. Nat. Herb. 22: 641. 1924. *Selleophytum Buchii* Urb. in Fedde, Repert. Sp. Nov. 13: 484. 1914.

Fruticosa, erecta, glabra, 3–10 dm. alta, ramis teretibus obscure brunneo-rubris plus minusve pruinatis, internodiis 2–4 cm. longis. Folia opposita, sessilia, 4–7 cm. longa et 1–1.5 cm. lata, anguste lanceolato-oblonga, glabra, subcoriacea, pallide viridia, subnitida, margine integra sed interdum aegerrime undulata, basi lata leviter cordata, supra medium sensim angustata, apice acuta, nervo medio supra prominente, lateralibus utroque latere 12–16, minoribus intermixtis, utrinque reticulato-conjunctis et prominentibus. Capitula pauca (solitaria vel terna umbellata), radiata, recte pedunculata pedunculis circ. 4–6 cm. longis, in juventute globosa nigrescentiaque, fructifera circ. 2 cm. lata et circ. 1.5 cm. longa. Involucri glabrati bracteae exteriores 4–5, laxae accumbentes, subcoriaceae, e basi circ. 2–2.5 mm. lata sensim angustatae, apice indurato subacutae, tergo tenuiter vel obsolete 3–5-nervatae, circ. 8–10 mm. longae; interiores lanceolato-oblongae, inferne coriaceae superne tenuiores, circ. 12–13 mm. longae et circ. 3–4 mm. latae, apice obtusiusculae. Flores ligulati flavi, tubo 2.5 mm. longi et (extrinsecus) pilosuli, limbo 8 mm. lati (apice non viso) tergo breviter pilosi. Paleae apice acuminate, pleraeque 3-nervatae, circ. 11–12 mm. longae et circ. 1–1.5 mm. latae. Achaenia oblongo-linearum, plano-obcompressa vel subtetragona, griseo-brunnea, exalata, apice et marginibus et minus costa interiore breviter denseque setosa, unaquaque facie ± 8 -sulculata, corpore marginalia ± 7 mm. longa et usque ad 1.3 mm. lata alia

usque ad 10 mm. longa et 0.6–0.7 mm. lata, apice biaristata aristis filiformibus antrorsum hispidis circ. 4–5 mm. longis, 1–2 squamellis interdum interjectis.

Type specimen: Collected by *Wilhelm Buch*, No. 1137, at altitude of 1,800 meters, in open forests, Morne la Selle, Haiti, January (Berl.).

Distribution: Known only from Haiti.

Specimens examined: *Emery C. Leonard 4103*, on cliff near Fond Parisien, Etang Saumatre, Haiti, May 5–13, 1920 (U.S.).

5. *Coreopsis cyclocarpa* Blake, Proc. Amer. Acad. 49: 339. 1913. *Leptosyne mexicana* A. Gray in Wats. Proc. Amer. Acad. 22: 429. 1887.

Herba perennis, 6–7 dm. alta; caulibus pluribus e radice lignea, infra parce pubescentibus et 1–2 mm. crassis. Folia opposita, integra vel prope medium rarissime trilobata, lamina (vel segmentis) lineari-filiformia, basi ciliata, apice acuta, 2–6 cm. longa. Capitula corymbose disposita, non numerosa, tenuiter pedunculata pedunculis glabris vel superne sparsim hispidis plerumque 2–7 cm. longis, pansa ad anthesin 1.5–2.5 cm. lata et circ. 6–8 mm. alta. Involucri bracteae exteriores 5 vel 6, glabrae, late lineari-oblongae vel ovato-lanceolatae, crassiusculae, apice acutae vel mucronatae, 2–3 (–3.5) mm. longae; interiores ovatae vel ovato-lanceolatae, glabratae vel apice fimbriato-ciliatae, 5–7 mm. longae. Flores ligulati 8–10, flavi, fertiles, ligula oblongi, apice subprofunde dentati, circ. 1.1–1.3 cm. longi. Paleae oblanceolatae, apice rotundato-obtusae, 4–5 mm. longae. Flores tubulosi exanulati, styli ramis apice incrassatis breviter appendiculatis. Achaenia valde obcompressa, epapposa; extima (ex floribus ligulatis) obovata, purpureo-nigrescentia, anguste alato-marginata, circ. 3.5 mm. longa et circ. 2.2–2.8 mm. lata; alia minora.

Type specimen: Collected by *Edward Palmer*, No. 568, along a rivulet in a grassy bottom, Río Blanco, State of Jalisco, Mexico, September, 1886 (U.S.).

Distribution: State of Jalisco, Mexico.

Specimens examined: *Palmer 568* (type, U.S.; cotype, Gray); *C. G. Pringle 3570*, State of Jalisco, September 10, 1890 (Gray); *idem 3841*, by streams, etc., near Guadalajara, State of Jalisco, September 24, 1891 (Berl.; Field, 2 sheets; Gray; N.Y.); *idem 11546*, alt. 1,500 meters, dry bluffs near Guadalajara, State of Jalisco, October 4, 1903 (Field; Gray); *J. N. Rose & J. H. Painter 7480*, near Guadalajara, September, 1903 (N.Y.).

6. *Coreopsis pinnatisecta* Blake, Proc. Amer. Acad. 49: 339. 1913. *Leptosyne Pringlei* Robins. & Greenm. Amer. Journ. Sci. 3. 50: 155. 1895.

Perennis, e radice brevi-oblonga crassiuscula lignosaque, 3–6 dm. alta, caulibus pluribus, adscendentibus, simplicibus vel subsimplicibus, infra foliosis supra subnudatis, striato-angulatis, glabratis vel infra moderate hispidis. Folia opposita, petiolata petiolis 0.5–1.2 cm. longis, petiolo adjecto 2–3 cm. longa, subrigida, pinnata, adscendentia, sparsim hispida; rhachi et (plerumque 5 vel 7) foliolis linearibus, acriter apiculatis, 0.4–1 mm. latis, foliolis 6–12 mm. longis inferioribus sensim longioribus. Capitula solitaria vel 1–4-congregata inflorescentia corymbosa, tenuiter pedunculata pedunculis 5–15 cm. longis, radiata, pansa ad anthesin 1.5–1.9 cm. lata et circ. 6–7 mm. alta. Involucri glabrati bracteae exteriores 5 vel 6, late oblongae, supra saepe latiores, apice obtusae, 3–4 mm. longae; interiores ovato-oblongae, apice puberulenti subobtusae, circ. 6 mm. longae. Flores ligulati circ. 6, flavi, ligula oblongi, apice 3-denticulati dente mediano minore, fertiles, circ. 9–11 mm. longi. Paleae glabrae, lineari-oblongae, apice subobtusae. Flores tubulosi 5-dentati, infra anulo hispido instructi, stylorum ramis apice incrassatis breviter appendiculatis. Achaenia obovata, atra, glabra, circ. 4 mm. longa et circ. 1.3 mm. lata, apice epapposo rotundata atque emarginata.

Type specimen: Collected by *Cyrus Guernsey Pringle*, No. 4871, at altitude of 2,100 meters, on the Sierra de San Felipe, State of Oaxaca, Mexico, August 7, 1894 (Gray).

Distribution: State of Oaxaca and reaching northward barely into State of Puebla, Mexico.

Specimens examined: *Pringle 4871* (type, Gray; cotypes, Berl.; N.Y.; Pom.; U.S.); *C. A. Purpus 4098*, Cerro de Paxtle, vicinity of San Luis Tultitlanapa, State of Puebla, September, 1909 (Field; Gray; N.Y.).

7. *Coreopsis insularis* (Brandeg.) Blake, Proc. Amer. Acad. 49: 340. 1913. *Leptosyne insularis* Brandeg. Erythea 7: 5. 1899.

Herbacea, probabiliter perennis, decumbens et diffuse ramosa, fere glabra, forsitan 3–6 dm. alta. Folia opposita, petiolata petiolis ± 6 mm. longis, petiolo adjecto 1–2.5 cm. longa, pinnatim plerumque 3- (rarius 5-) lobata, lobis anguste linearibus 0.4–1 mm. latis. Capitula pauca, tenuissime pedunculata pedunculis glabris saepius 0.8–2 dm. longis, radiata, pansa ad anthesin circ. 1.3 cm. lata et circ. 5–6 mm. alta. Involucri bracteae exteriores circ. 5 vel 6, lineares

vel lineari-lanceolatae, subglabrae, apice obtusae vel rotundatae, circ. 2.5–3.5 mm. longae; interiores ovatae vel oblongo-acuminatae, 4–5 mm. longae. Flores ligulati ± 5 , flavi, fertiles, ligula elliptico-oblongi, apice 2-lobulati, circ. 7 mm. longi. Paleae lineares. Flores tubulosi minute 2–5 mm. longi, exanulati, stylosum ramis termino anguste elongato-conicis. Achaenia extima (ex floribus ligulatis orta) valde obcompressa, elliptico-obovata, late alata, glaberrima, 3.5–4.2 mm. longa, epapposa; interiora angustiora, anguste marginata.

Type specimen: Collected by A. W. Anthony, No. 394, on Socorro Island, off coast of Baja California, Mexico, March–June, 1897 (Calif.).

Distribution: Known only from Socorro Island, off coast of Baja California.

Specimens examined: *Anthony 394* (type, Calif.; cotypes, Gray; U.S.); *F. S. Bachelew 223*, Socorro Island, May 27–July 3, 1903 (Gray; N.Y.).

8. *Coreopsis maritima* (Nutt.) Hook. f. Bot. Mag. pl. 6241. 1876. *Tuckermannia maritima* Nutt., Trans. Amer. Phil. Soc. 2. 7: 363. 1841. *Leptosyne maritima* (Nutt.) A. Gray, Proc. Amer. Acad. 7: 358. 1868; etiam Noblet, Rev. Hort. 1873: 330 et pl. (sine num.). 1873. *L. maritima* var. *gigantea* Hort. ex Noblet, loc. cit. *Leptogyne maritima* (Nutt.) A. Gray ex Hook. f. loc. cit. (sphalm).

Caules carnosus-herbacei, e radice crassa profunda recta subligneae, patentes, ramosi, glabri, 3–8 dm. alti. Folia nunc alterna nunc opposita, petiolata petiolis latis vittatis striatis basi dilitatis 1–7.5 cm. longis, petiolo adjecto saepius 1–1.5 cm. longa, 2–3-pinnata, segmentis oblonge linearibus, planis, obtusis, 1–2.5 mm. latis et usque ad 3 cm. longis. Capitula non numerosa, speciosa, elongate pedunculata pedunculis robustis glabris plerumque 1.5–4 dm. longis, radiata, pansa ad anthesin 6.5–8 (raro usque ad 13.5) cm. lata et ± 1.5 cm. alta. Involucri bracteae exteriores 6–8, oblongae vel ovato-lanceolatae, obtusae, glabrae vel apice minutissime pubescentes, 1–2 cm. longae; interiores oblongae, apice pubescentes, saepius paulo longiores. Flores ligulati 14–20 (plerumque 16–18), flavi, ligula elliptico-oblonge, apice circ. 3-denticulati, 2–3.5 (–5.5) cm. longi. Paleae glaberrimae, oblongo-lineares, apice acutae, demum circ. 1–1.2 cm. longae. Florum tubulosorum stylosum rami abrupte conico-incrassati vix appendiculati, anulo glabro. Achaenia anguste oblongo-obovata, plana, nigra nisi alis atro-brunneis, circ. 6–7 mm. longa et alis inclusis 2–3.5 mm. latis, apice glabra vel interdum alis productis breviter 1–2-aristata.

Type specimen: Collected by *Edward Tuckerman, Jr.*, on shelving rocks, near sea, San Diego, California. Type material not examined, perhaps still extant among the Nuttall plants (Brit., Kew, or Phila.).

Distribution: Southwesternmost California; rare northwardly as far as Monterey County and southwardly in Baja (Lower) California as far as All Saints' Bay and San Martín Island.

Specimens examined: *A. W. Anthony* 216, San Martín Island, Baja (Lower) California, March–June, 1897 (Field; Gray; Pom.); *Margaret Armstrong* 741, San Diego, California (N.Y.); *T. S. Brandegee*, San Martín Island, Baja California, April, 1897 (Pom.); *idem*, San Diego, California, June, 1900 (Pom.); *idem*, eodem loco, May, 1906 (N.Y.); *Harley P. Chandler* 5123, La Jolla, California, April 16, 1904 (N.Y.); *F. E. & E. S. Clements* 226, cliff edge, dune strand, eodem loco, March 14, 1914 (Field; Gray; N.Y.); *D. Cleveland*, San Diego, California (Gray); *R. B. Cowles*, moist slope, Coronado Islands, Baja California, March 29, 1921 (Pom.); *G. W. Dunn*, eodem loco, April 17, 1891 (Field); *Alice Eastwood* 2565, Point Loma, California, April 6, 1913 (Gray); *Miss F. E. Fish*, All Saints' Bay, Baja (Lower) California, May, 1882 (Gray); *G. L. Fleming & W. W. Eggleston* 19676, alt. 50 meters, Torrey Pines Reservation, San Diego County, California, April 10, 1924 (Gray; Pom.); *Hort. Bot. Harvard Univ.* cult. annis 1851 et 1852 e sem. a Fremontio lect. (Gray); *Marcus E. Jones*, Todos Santos Bay, Baja California, April 11, 1882 (Pom., 2 sheets); *idem*, ranch 29 miles southwest of Tía Juana, Baja California, April 13, 1925 (Pom., 2 sheets); *idem*, Coronado Islands, Baja California, June 10, 1926 (Pom.); *idem* 3134, Soledad, California, March 29, 1882 (N.Y., 2 sheets; Pom., 2 sheets); *A. J. McClatchie*, San Diego, California, April, 1893 (N.Y.); *Philip A. Munz* 7955, sea bluffs, Cardiff, California, May 9, 1924 (Gray; Pom.); *C. R. Orcutt*, Point Loma, California, March 24, 1884 (Field); *idem & W. S. Bowne*, San Diego, 1884 (N.Y.); *C. C. Parry*, eodem loco, 1850 (N.Y., 2 sheets, one from the Torrey Herbarium and constituting the basis of a drawing by Riocreux); *idem*, eodem loco, 1883 (Gray); *C. G. Pringle*, bluffs of the seashore, eodem loco, April 25, 1882 (Field); *F. M. Reed* 6147, Potrero Canyon, Baja California, February 5, 1929 (Pom.); *M. S. Snyder*, seashore, La Jolla, California, February 25, 1895 (Field, 2 sheets); *Mary F. Spencer* 86, in beach sand, vicinity of San Diego, California, April 16, 1916 (Gray; N.Y.); *H. Strauss*, San Diego and nearby islands, September 24, 1908 (Berl.) and February 3, 1912 (Berl.); *L. Street*, San Elejo Lagoon, Baja California, May 12, 1917 (Pom.).

9. *Coreopsis gigantea* (Kell.) H. M. Hall, Univ. Calif. Publ. Bot. 3: 142. 1907; cf. S. B. Parish, *Muhlenbergia* 8: 133-134. 1913; etiam C. F. Millspaugh, Field Mus. Bot. 5: 284, *pl.* 9 and *pl.* 13, *f.* 1. 1923. *Leptosyne gigantea* Kellogg, Proc. Calif. Acad. 4: 198. 1872. *Tuckermannia gigantea* (Kell.) Jones, Contrib. West. Bot. No. 15: 74. 1929.

Perennis, erecta, e radice magna plus minusve lignosa, caule robusto carnosio vix lignoso 5-12.5 cm. crasso et plerumque 3-12 rarius usque ad 20 rariissime usque ad 30 dm. alto, durante per 3-8 annos, ramis glabris, primariis distantibus horizontalibus vel adscendentibus terminos versus foliosis. Folia saepius alterna, petiolata petiolis glabris carnosius basi plus minusve dilatatis 2-9 cm. longis, petiolo adjecto saepius 0.8-2 dm. longa, glabra, plerumque 2-3-pinnata, segmentis nunc moderate (0.8-1.3 mm. latis) nunc angustissime (0.25-0.4 mm. latis) lineari-filiformibus, integris vel lateraliter submarginatis, saepe 3-nervatis, usque ad +5 cm. longis. Capitula pedunculata pedunculis (ramulis ultimis) subrobustis stramineis nudis vel subnudis corymbose congregatis plerumque 1-2 dm. longis, plerumque radiata, pansa ad anthesin 4-8 cm. lata et circ. 10-13 mm. alta. Involucri glabri bractee exteriores 5-7, oblongo-lineares vel lineari-lanceolatae, apice truncatae, 1-2 cm. longae, quam interiores 12-15 ovato-oblongae vel obovatae apice pubescentes nunc paulo breviores nunc vix longiores. Flores ligulati 10-16, flavi vel interdum apice pallido-flavidi, ligula anguste vel late oblanceolata, apice circ. 3-dentati, 2-3.8 cm. longi. Paleae oblongo-oblanceolatae, glaberrimae, apice obtusae, demum ± 7 mm. longae. Florum tubulorum stylorum rami abrupte incrassati non appendiculati, anulo setis capitatis hispido. Achaenia subplana, obovato-oblonga vel oblanceolato-oblonga, glabrata, nigra vel marginibus latis subincrassatis atro-brunnea, omnino (alis inclusis) 5.5-6.8 mm. longa et 2.5-3.5 mm. lata, apice calva vel alis productis obsolete bidentata, saepe poculo minutissimo centrali coronata.

Type specimen: Collected by *William George Washington Harford* (under auspices of *Captain S. Forney, United States Coast Survey*), near Cuyler Harbor, San Miguel Island, about 40 miles off coast of Santa Barbara, California.

Distribution: San Luis Obispo to Ventura counties, southwestern California; also on islands off shore and extending southwardly as far as Guadalupe Island, off coast of Baja (Lower) California.

Specimens examined (all from California or islands nearby except where otherwise noted [*Palmer 41*]): *Anon.*, mouth of Santa Maria

River, February 7, 1880 (Gray); *T. S. Brandege*, Island Santa Cruz, April, 1888 (Gray); *Dr. Coulter 316*, San Miguel to Santa Barbara (Gray); *M. B. Dunkle 1857*, alt. 4.5 meters, shallow soil on rock, Bird Rock, Santa Catalina Island, April 11, 1928 (Pom.); *Alice Eastwood*, Point Sal (near boundary between Santa Barbara and San Luis Obispo counties), May 12, 1896 (Gray); *W. W. Eggleston 19577*, alt. 30 meters, Concepcion to Jalama, Santa Barbara County, March 29, 1924 (Gray; Pom.); *A. D. E. Elmer 3634*, Surf, Santa Barbara County, May, 1902 (Field; Gray; Pom.); *Roxana S. Ferris 7572*, ocean side of sand dunes, 5 miles south of Surf, Santa Barbara County, April 4, 1929 (Pom.); *Grant & Wheeler 680 and 2228*, Catalina Island, April 21–26, 1904 (Field; N.Y.; Pom.); *John Thomas Howell 8220*, San Nicolas Island, March 13, 1932 (Pom.); *Marcus E. Jones*, Santa Cruz Island, April 13, 1924 (Pom., 2 sheets); *idem*, Malibu Hills, north of Santa Monica Mountains, April 26, 1926 (Pom.); *idem*, Santa Cruz Island, March 25, 1929 (Pom.); *Philips Mills Jones*, Santa Rosa Island, April, 1901 (Calif.); *Ezra C. Knopf 56*, in rocky soil on hillsides, Pebble Beach Road, Santa Catalina Island, March 26, 1921 (Field); *idem 258*, Bird Rock, Santa Catalina Island, November 20, 1921 (Field); *C. F. Millspaugh 4630*, eodem loco, January 22, 1920 (Field); *Philip A. Munz 11378*, sand dunes, Surf, May 17, 1929 (Pom.); *idem & E. Crow 11553*, Santa Cruz Island, April 7, 1930 (Pom.); *idem 11691*, seedlings on shaded wall of Water Canyon, Santa Rosa Island, April 8, 1930 (Pom.); *idem 11750*, shaded canyon wall northwest of ranch house, Santa Rosa Island, April 9, 1930 (Pom.); *Munz & J. Voss 11877*, high exposed cliff, San Miguel Island, April 10, 1930 (Pom.); *L. W. Nuttall 571*, on sea cliffs, near Avalon, Santa Catalina Island, May 14, 1920 (Field); *Edward Palmer 41*, Guadalupe Island, off Baja (Lower) California, 1875 (Berl.; Gray); *Parry*, San Diego (Gray); *Miss Plummer*, mountains above Santa Barbara, 1878 (Gray); *Huron H. Smith 5034*, road to Pebble Beach, Santa Catalina Island, May 30, 1912 (Field); *Blanch Trask 76*, San Nicolas Island, April, 1901 (Gray, 2 sheets); *W. G. Wright*, Ventura County, March, 1894 (Field).

10. *Coreopsis Bigelovii* (A. Gray) Voss in Sieb. & Voss, *Vilmorin Blumeng.* ed. 3. 1: 488. 1894 (where spelled *C. Bigelowii*). *Pugliopappus Bigelovii* A. Gray, *Pacif. R. Rept.* 4: 104. 1857. *P. Breweri* A. Gray, *Proc. Amer. Acad.* 8: 660. 1873. *Leptosyne Bigelovii* A. Gray, *Syn. Fl. N. Amer.* 1, pt. 2: 300. 1884. *L. Hamiltonii* Elmer, *Bot. Gaz.* 41: 323. 1906. *Coreopsis Bigelovii* (A. Gray) H. M. Hall, *Univ. Calif. Publ. Bot.* 3: 141. 1907.

Herba annua, erecta, 1–4 dm. alta, caulibus saepius pluribus vel numerosis, simplicibus vel inferne ramosis, basim versus foliosis, supra multum elongatis ac nudis pro pedunculis, glabris. Folia saepe dense congregata, plus minusve alterna, petiolata petiolis usque ad 6 cm. longis, petiolo adjecto 5–11 cm. longa, plerumque 1–2-pinnata, segmentis ultimis linearibus, planis, obtusiusculis, submembranaceis, glaberrimis vel rarius vix scabrido-hispidis, plerumque 0.6–1.7 mm. latis. Capitula caules (pedunculos) terminantia, radiata, pansa ad anthesin 2–4.2 cm. lata et 0.8–1 cm. alta. Involucri glabri bracteae exteriores circ. 8, lineares, apice obtusiusculae ac nitido-induratae, 4–9 mm. longae; interiores oblongo-ovatae, moderate longiores. Flores ligulati 8, flavi (interdum infra intense supra aegre), ligula elliptico-oblanceolati vel anguste obovati, apice dentati, fertiles, 1–2 cm. longi. Paleae lineari-oblongae vel naviculoideae, obtusae vel subacutae, glabrae, apice minute eroso-ciliatae, demum circ. 7–9 mm. longae. Flores tubulosi anulo glabri, stylorum ramis abrupte terminantibus et vix appendiculatis. Achaenia dimorpha exteriora (e floribus ligulatis) valde obcompressa, cuneato-obovata, rubro-nigra, glabrata, faciebus valde rugosa, marginibus anguste calloso-alata, apice exaristata, 4–5 mm. longa et 2–3 mm. lata; interiora (e floribus tubulosis) angustiora, oblongo-lineararia, faciebus nitidis nigra, tergo glabrata ventre erecte albido-villosa, marginibus densissime erecto- et albido-villosa, corpore 4–6.2 mm. longa et ± 1.5 mm. lata, apice biaristata aristis lanceolatis planis densissime erecteque albido-ciliatis circ. 2–3 mm. longis, inter aristas poculo membranaceo vix manifesto coronata.

Type specimen: Collected by *John Milton Bigelow*, Mojave Creek, California, 1853–1854 (Gray).

Distribution: California.

Specimens examined: *R. Bacigalupi* 1209, alt. 540 meters, just above Oak Grove on the Mineral King Road, Tulare County, April 23, 1925 (Pom.; forma *elator*); *Bigelow* (type, Gray); *W. H. Brewer* 241, San Buenaventura, 1860–1862 (Gray; sub nom. *Pugiopappo Breweri*); *Ira W. Clokey & B. Templeton* 4520, alt. 350 meters, dry open hillside, Mandeville Canyon, Santa Monica Mountains, March, 1929 (Pom.); *Frederick V. Coville & Frederick Funston* 742, alt. 800–2,000 meters, Shepherd Canyon, Argus Mountains, April 30, 1891 (Berl.; Field; Gray); *Craig, Newsom, & Hiland* 80, at 35 miles south of Randsburg, Mojave Desert, April 5, 1927 (Pom.); *W. R. Dudley* 340, region of Tehachopi Peak, Tehachopi Mountains, June 25, 1895 (N.Y.); *Alice Eastwood*, Kaweah, April 27, 1895 (Gray); *H. C.*

Ford, Santa Barbara County, 1889 (Gray); *G. B. Grant* 5424, Saugus, April 23, 1903 (Pom., 2 sheets); *H. M. Hall* 3074, alt. 1,050 meters, vicinity of Elizabeth Lake, Antelope Valley, southern California, May 1-3, 1902 (Pom.); *A. A. Heller* 7662, Kern Canyon, Kern County, April 12, 1905 (Field; Gray); *C. L. Hitchcock* 12340, near brush, open desert, 10 miles southwest of Shoshone, April 17, 1932 (Pom.); *Marcus E. Jones*, alt. 1,380 meters, Darwin, April 28, 1897 (Pom.); *idem*, alt. 1,380 meters, Shepherd's Canyon, Argus, Mountains, April 30, 1897 (N.Y.; Pom.); *idem*, alt. 1,800 meters, Pleasant Canyon, Panamint Mountains, May 6, 1897 (Pom.); *idem*, alt. 1,140 meters, Cajon Pass, May 16, 1903 (Pom., 2 sheets); *idem*, Cave Spring, March 12, 1924 (Pom.); *William L. Kennedy*, Fort Tejon, spring of 1876 (Field); *J. G. Lemmon*, top of Mount Diablo (Field); *idem* 138, Mojave Desert, 1880 (Gray); *Philip A. Munz* 4466, alt. 1,140 meters, dry slope near south side of summit, Cajon Pass, southern California, April 27, 1921 (Pom.); *idem* 9136, alt. 900 meters, dry slope, Tule River, Tulare County, March 22, 1925 (Pom.); *idem* 9186, alt. 900 meters, disintegrated lava, north of Parkfield, Monterey County, March 24, 1925 (Pom.); *idem* 10042, sandy desert, 5 miles south of Willow Springs, April 4, 1926 (Pom.); *idem*, *R. D. Harwood & I. M. Johnston* 4077, alt. 1,200 meters, clearing in chaparral, north side of Cajon Pass, May 25, 1930 (Pom.); *Munz & D. Keck* 7842, gravelly wash, 7 miles east of Daggett, April 6, 1924 (Pom.); *idem* 7879, sandy wash, 10 miles southwest of Garlic Springs, Mojave Desert, April 8, 1924 (Pom.); *Samuel B. Parish*, Marengo, April, 1882 (Field); *idem & W. F. Parish* 226, Whitewater River, March, 1881 (Berl.; Field); *C. C. Parry*, Pacific Coast of North America, 1880 (Field); *idem* 115, eodem loco, 1881 (Field); *idem & J. G. Lemmon* 184, southern California, etc., 1876 (Field); *C. G. Pringle*, hills bordering the Mojave Desert, May 11, 1882 (Field; Gray); *C. A. Purpus* 5063, alt. 300-600 meters, sunny hillsides, Middle Tule River, April-September, 1897 (Gray); *idem* 5531, alt. 1,200-1,500 meters, hillsides near Erskin Creek, southeastern California (Gray); *Marjorie Shaw* 1941, Upper Cajon Pass, May, 1917 (Pom.); *eadem*, *Edna Spaulding & Mrs. C. L. Walton*, alt. 900 meters, Antelope Valley, Mojave Desert, April 6-8, 1917 (Pom.); *Mary F. Spencer* 407, summit of Cajon Pass, San Bernardino County, April 27, 1917 (Gray; Pom.); *eadem* 1954, alt. 960 meters, Mojave Desert, May 1, 1922 (Gray; Pom.); *eadem* 2040, rocky places, Maillard Canyon, near Banning, April 23, 1922 (Pom.); *William Trelease*, Hesperia, April 10, 1892 (Mo., 2 sheets); *G. R. Vasey*

290, Branch of Mojave River, 1880 (Field; Gray); *W. G. Wright*, San Bernardino, 1880 (Berl.); *idem* 172, Colorado Desert, March, 1881 (Gray).

11. *Coreopsis Calliopsidea* (DC.) A. Gray in Torr. Bot. Mex. Bound. 90. 1858. *Agarista Calliopsidea* DC. Prodr. 5: 569. 1836; Regel, Gartenflora 23: 356, pl. 816. 1874. *Pugiopappus Calliopsidea* (DC.) A. Gray, Proc. Amer. Acad. 8: 660. 1873; Bot. Calif. 1: 355. 1876. *Leptosyne Calliopsidea* (DC.) A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 300. 1884. *L. Calliopsidea* var. *nana* A. Gray, loc. cit.

Herba annua, erecta, glabra, 1–6 dm. alta, caule tereti simpliciter vel ramoso nunc usque ad medium (vel ultra) nunc tantum ad basim folioso. Folia alterna, petiolata petiolis alatis usque ad 2 (raro –5) cm. longis, petiolo adjecto 1–7 cm. longa, 1–2-pinnatifida rhachilobisque planis linearibusque plerumque 0.6–1.7 (raro –5) mm. latis. Capitula ramos elongatos aphyllis terminantia, solitaria, radiata, pansa ad anthesin 2–5 cm. lata et circ. 9–12 mm. alta. Involucri bractee exteriores 4–6, oblongo-ovatae vel saepius ovato-cordatae, apice obtusae, angustissime pallido-marginatae, tergo longitudinaliter 4–13-striatae, 4–7 mm. longae; interiores circ. 8, oblongo-ovatae, apice acutae vel pubescentes, 6–13 mm. longae. Flores ligulati plerumque 8, flavi, tubo clavo-setosi, ligula late cuneato-obovati, apice plus minusve truncati et irregulariter multidenticulati, 1–2.5 cm. longi. Paleae lineari-oblongae, longitudinaliter nitido-striatae striis interrupte brunneis, supra minutissime eroso-ciliatae, plerumque 4–7 mm. longae, cum achaenio deciduae, ad faciem hujus exteriorem applicatae. Flores tubulosi corolla 5-dentati, basim versus clavo-setosi, anulo pubescentes, stylorum ramis terminaliter brevi-conici. Achaenia plana dimorpha, exteriora (ex floribus ligulatis) obovato-oblonga faciebus nitidis purpureo-nigrisque glabra vel sparsim pulverulenta, margine subanguste alata ala parce incrassata, apice calva, omnino ± 4.5 mm. longa et ± 2.2 mm. lata; interiora (ex floribus tubulosis) lineari-oblongae vel cuneato-oblongae, nigrae, tergo nitidae glaberrimae, marginibus ventrequae erectae elongato-villosae, corpore 4–5 mm. longae, apice biaristatae aristis circ. 3–4 mm. longis densissime antrorso-hispidis.

Type specimen: Collected by *David Douglas* in California (Del.).

Distribution: Southern half of California.

Specimens examined: *Anon.*, loco ignoto (Berl.); *Townsend S. Brandegee*, Alcalde, Fresno County, April, 1891 (Field); *Craig, Newsom & Hiland* 129, Randsburg, April 5, 1927 (Pom.); *David*

Douglas, California (Gray); *idem* (distrib. Herb. Soc. Hort. Lond.), California, 1833 (Berl.; doubtless a cotype); *Alice Eastwood*, Cuyama, White Hills, May 2, 1896 (Gray); *eadem* 3187, Mojave, Kern County, May 12, 1913 (Gray); *J. B. Feudge* 1382, alt. 750 meters, open desert, Kramer, Mojave Desert, May 25, 1926 (Pom.); *Harvard Univ. Bot. Gard.*, cult., 1871 (Gray); *H. E. Hasse*, Mojave Station, Kern County, March 15, 1889 (Field); *A. A. Heller* 7723, gravelly hill-sides, Sunset, April 20, 1905 (Field; Gray); *Ivan M. Johnston*, rather common, sandy soil, near Mojave, May 5, 1920 (Pom.); *idem*, common, 1 mile south of Crutts Post Office, Mojave Desert, May 14, 1922 (Pom.); *Marcus E. Jones*, Cuyama Canyon, April 28, 1926 (Pom.); *idem*, Adelanto, May 12, 1927 (Pom.); *idem*, alt. 900 meters, Mojave, May 20, 1903 (Pom.); *A. Kellogg & W. G. W. Harford* 436, California (Gray); *J. G. Lemmon* (137?), California (Gray; type of var. *nana* A. Gray); *idem* 4520, Lemmon's Ranch, Cholame, June, 1887 (Gray); *S. B. Parish* 9771, Mojave Station, Kern County, April 26, 1915 (Gray); *Parry*, California (Gray); *W. M. Pierce*, desert, 20 miles east of Victorville, April 12, 1922 (Pom.); *C. G. Pringle*, Mojave Desert, May 14, 1882 (Field; Gray).

12. *Coreopsis Douglasii* (DC.) H. M. Hall, Univ. Calif. Publ. Bot. 3: 140. 1907. *Leptosyne Douglasii* DC. Prodr. 5: 531. 1836. *L. californica* Nutt. Trans. Amer. Phil. Soc. ser. 2, 7: 363. 1841. *L. Newberryi* A. Gray, Proc. Amer. Acad. 7: 358. 1868.

Herba annua, glabra, 1.5–4 dm. alta, caule brevi erectoque ramoso ramis (pedunculis) paucis basim versus foliosis aliter nudis vel raro folio valde imminuto instructis, apice monocephalicis. Folia (subradicalia) petiolata petiolis plerumque 2–5 cm. longis, petiolo adjecto 3–10 (–15) cm. longa, filiformi-lineariter integrae vel saepius 2–5-partita lobis lineari-filiformibus apice obtusis. Capitula (solitaria, elongatissime pedunculata) radiata, pansa ad anthesin 2–3.3 cm. lata et 6–8 mm. alta. Involucri glabrati bractae exteriores 5–16, lineari-attenuatae vel lineari-oblongae, apice obtusissimae, 4–8 mm. longae; interiores ovatae, apice acutiusculae, paulo longiores. Flores ligulati circ. 8, fertiles, flavi (vel apicem versus saepe albidi), ligula oblongi vel ovato-subrotundati, apice circ. 3-dentati dentibus saepe magnis rotundatisque, plerumque 1–1.8 cm. longi. Paleae lineares vel lineari-oblongae, apice obtusae, demum 3–6.5 mm. longae. Flores tubulosi anulo plerumque hispidulo instructi, stylorum ramis cono hispidulo lato brevique terminatis. Achaenia obcompressa, cuneato-obovata, diverse rubro-brunnea vel nigro-rubra, primo (sed non demum) nitida, marginibus crasso-

alata, duabus faciebus setis clavo minimo similibus instructa, 2–3 mm. longa et 1.2–1.5 mm. lata, apice exaristata sed poculo minuto membranaceoque coronata.

Type specimen: Collected by *David Douglas* in California (Del.).

Distribution: Southern Arizona westward into southern California and reaching southward slightly into Baja (Lower) California, Mexico.

Specimens examined (all from California except where noted to the contrary): *LeRoy Abrams* 3342, Moro Hills, Fallbrook, April 28, 1903 (Gray); *idem* 3628, dry hills between Campo and Jacumba, May 27, 1903 (Gray; Pom., 2 sheets); *idem* 11788, sandy areas in hills between Rosamond and Mojave, April 30, 1927 (Pom.); *idem* 11915, between Red Rock Canyon and Walker Pass Road, El Paso Range, May 1, 1927 (Pom.); *C. F. Baker* 4090, Claremont, April 15, 1903 (Field; Gray; Pom.); *H. N. Bolander*, Julian City near Golden Cherry Mine (Gray); *Katharine Brandegee*, San Diego, April 25, 1900 (Calif.); *T. S. Brandegee* 3368, common on the mesas, San Diego, April 26, 1903 (Field; Gray; Pom., 2 sheets); *F. E. & E. S. Clements* 224, La Jolla, March 7, 1914 (Field; Gray); *idem* 225, eodem loco, March 17, 1914 (Calif.; Gray); *D. Cleveland*, San Luis Rey, 1877 (Gray); *Mrs. A. L. Coombs*, Warner's Springs, San Diego County, spring of 1911 (Gray); *Dr. Coulter* 339, California (Gray); *Douglas*, California (cotype, Gray); *Alice Eastwood* 2574, Warner's Hot Springs, San Diego County, April 9, 1913 (Gray); *eadem* 3194, Mojave, Kern County, May 13, 1913 (Gray); *eadem* 4377, Blochman's Ranch, Mariposa County, April 21, 1915 (Gray); *W. W. Eggleston* 19748, alt. 850–950 meters, Jacumba Springs, San Diego County, April 11–16, 1924 (Pom.); *Roxana S. Ferris* 7466, sandy flat between Coso Hot Springs and Coso Junction, Kern County, April 30, 1928 (Pom.); *eadem* 7710, about 5 miles from Mojave or the Willow Springs Road, Kern County, May 3, 1929 (Pom.); *George B. Grant* 681, Altadena, April, 1902 (Field, 2 sheets); *idem* 682, eodem loco et tempore (Gray); *Harvey M. Hall* 3973, northwest corner of Baja California, Mexico, April, 1903 (Field); *Harvard University Botanical Garden*, cult., 1882 (Gray); *H. E. Hasse*, Los Angeles, April 22, 1888 (Field); *A. A. Heller* 7674, Kramer, April 13, 1905 (Field; Gray); *C. L. Hitchcock* 12224, sandy wash, 10 miles southeast of White Tanks, East Riverside County, April 9, 1932 (Pom.); *Edmund C. Jaeger* 140, Cabazon, April 11, 1920 (Pom.); *Ivan M. Johnston*, among creosote bushes in open sandy areas, near Mojave, May 5, 1920 (Pom.); *idem*, on hillside, Victorville, May 15, 1920 (Pom.);

idem, alt. 870 meters, in sandy wash, 5 miles southeast of Victorville, May 17, 1920 (Pom.); *idem* 1251, alt. 600 meters, field above Claremont, March 29, 1917 (Pom.); *Marcus E. Jones*, Pasadena, February 22, 1882 (Pom.); *idem*, Fallbrook, March 25, 1882 (Pom.); *idem*, San Diego, April 3, 1882 (Pom.); *idem*, alt. 300 meters, White-water, May 11, 1903 (Pom., 2 sheets); *idem*, alt. 880 meters, Victor, May 17, 1903 (Pom., 2 sheets); *idem*, San Diego, April 14, 1906 (Pom., 2 sheets); *idem*, alt. 1,200 meters, Julian, April 17, 1906 (Pom.); *idem*, near Santa Ana Canyon, March 10, 1926 (Pom.); *idem* 3361 pro parte, Pasadena, May 2, 1882 (N.Y.; Pom., 2 sheets); *idem* 3373, eodem loco et tempore (Berl.); *William Kellogg*, Rancho Encinal, Monterey County, April 15, 1903 (Gray); *J. G. Lemmon*, San Bernardino, March, 1880 (Gray); *Philip A. Munz* 2148, foothills, Corona, April 27, 1918 (Pom.); *idem* 2538, alt. 750 meters, desert, Barstow, April 12, 1919 (Pom.); *idem* 3814, alt. 300 meters, dry slope, Santa Ana River Canyon near Rincon, April 11, 1920 (Pom.); *idem* 9357, alt. 480–510 meters, dry bottom of Cobal Canyon, north of Claremont (Gray; Pom.); *idem* 12415, open desert, 20 miles north of Box S Ranch, San Bernardino County, April 21, 1932 (Pom.); *idem* & *D. Keck* 7930, sandy desert 20 miles west of Barstow, April 10, 1924 (Gray; Pom.); *Philip A. Munz* & *R. D. Harwood* 3385, alt. 360 meters, gravelly wash, Yemescal Canyon, March 20, 1920 (Pom.); *idem* 3475, alt. 900 meters, sand, Victorville, March 28, 1920 (Pom.); *Philip A. Munz*, *L. Street*, & *G. Williams* 2362, alt. 535 meters, roadside, San Gorgonio Pass, near Cabazon, March 28, 1919 (Pom.); *idem* 2388, eodem loco et tempore (Pom.); *Newberry*, Sitgreaves Pass, southern Arizona, March 26 (Gray; type of *Leptosyne Newberryi* A. Gray); *Thomas Nuttall*, sine loco vel tempore (Gray); *Charles R. Orcutt*, Point Loma, San Diego, March 12, 1884 (Calif.); *idem*, northern Baja California, April 17, 1886 (Field); *Edward Palmer* 126, Camp Grant, May 10, 1867 (Gray; the specimen cited by A. Gray for his *Leptosyne Newberryi*); *idem* 217, Mojave River, southeastern California, May, 1876 (Field); *idem* 677, San Quentin Bay, Baja California, January, 1889 (Field; Gray); *S. B. Parish* 2211, Whitewater Canyon, April, 1880 (Gray); *idem* 5191, alt. 300–750 meters, vicinity of San Bernardino, April 13, 1903 (Field); *idem* 10415, Mojave Station, Kern County, March 25, 1915 (Gray); *idem* & *W. F. Parish*, San Bernardino, April, 1881 (Field); *idem*, foothills of San Bernardino Mountains, May, 1888 (Field); *C. C. Parry*, San Bernardino (Gray); *idem* 116 (Gray); *idem* & *J. G. Lemmon* 185, southern California, etc., 1876 (Field; Gray); *W. M. Pierce*, desert, 20 miles east of Victorville, April 12,

1922 (Pom.); *M. S. Snyder*, La Jolla, March 15, 1895 (Field); *Mary F. Spencer 172*, in hollows of granite rocks, San Diego County, April 8, 1917 (Gray; Pom.); *eadem 563*, desert sand, Hesperia, Mojave Desert, May 4, 1917 (Gray; Pom.); *eadem 653*, alt. 750 meters, in rocky places, Maillard Canyon, April 22, 1922 (Gray); *eadem 653a*, in rocky places, Snow Creek near White Water, Mojave Desert, April 10, 1922 (Gray); *eadem 2123*, alt. 750 meters, in rocky places, Maillard Canyon near Banning, April 23, 1922 (Gray); *Wallace*, Los Angeles, 1854 (Gray).

The exterior involucri bracts, when few and more oblong, would seem to connote a variety. Too many apparently transitional forms have been encountered in herbaria, however, to permit as yet definite conclusions to be reached.

13. *Coreopsis Stillmanii* (A. Gray) Blake, Proc. Amer. Acad. 49: 342. 1914. *Leptosyne Stillmanii* A. Gray in E. Durand, Journ. Acad. Nat. Sci. Phila. 3: 91. 1855; Torr. Bot. Mex. Bound 2: 92. 1859. Involucri bracteeae exteriores 5-8, oblongae, 4-8 mm. longae; achae-niis 3.5-4 mm. longis. *C. Stillmanii*. Involucri bracteeae exteriores 8-16, tenuissime lineares superne usque ad apicem sensim angustatae, 7-12 mm. longae; achae-niis 4-4.5 mm. longis. var. *β Jonesii*.

Herba annua, erecta, glabra, 1.5-4.5 dm. alta, infra ramosa ac foliosa, ramis (interdum numerosissimis) in pedunculos nudos erectos monocephalicos elongatis. Folia petiolata petiolis usque ad 5 cm. longis saepe latis planisque, petiolo adjecto 4-10 cm. longa, pinnatim 3-7-partita foliolis membranaceis anguste lineari-spathu-latis apice obtusis supra medium plerumque 1-2.5 mm. latis interdum rursus lobatis. Capitula (solitaria, longe pedunculata) radiata, pansa ad anthesin 2-3 cm. lata et 7-9 mm. alta. Involucri bracteeae exteri-ores 5-8, oblongae, glabrae, obtusae, 4-8 mm. longae; interiores late ovatae, apice pubescentes, interdum paulo breviores. Flores ligulati circ. 8, flavi, ligula oblongi vel obovati, apice grosse circ. 3-dentati, fertiles, usque ad 1.5 cm. longi et 1 cm. lati. Paleae glab-rae, oblongae, plus minusve acutae, 4-6 mm. longae. Flores tubulosi anulo plus minusve glabri, stylorum ramis termino abrupte crasso-conicis et vix apiculatis. Achaenia cuneato-orbiculata vel anguste cuneato-obovata, plana, dorso glabrata ventre plus minusve papil-losa vel aegre setosa setis interdum clavellatis, duabus faciebus nigra, margine crasso-alata rugosaque, circ. 3.5-4 mm. longa et (alis adjectis) 1.4-2.3 mm. lata, apice exaristata sed poculo membranaceo coronata.

Type specimen: Collected by *Dr. Stillman* in valley of the upper Sacramento River, northern California (Gray).

Distribution: California.

Specimens examined: *H. N. Bolander 4520*, hillsides, Auburn, April 10, 1865 (Calif.; Gray; N.Y.; U.S.); *Thomas Bridges 260*, California (N.Y.); *Mrs. C. C. Bruce 1987*, Iron Canyon, Butte County, May, 1897 (Pom., 2 sheets); *J. W. Congdon*, Mariposa Water Ditch, Mariposa County, March 28, 1901 and April 4, 1903 (U.S.); *Harvard University Botanical Garden*, cult., 1873 and 1882 (Gray); *A. Kellogg & W. G. W. Harford 439*, dry sandhills, Antioch, April 16, 1868–1869 (Gray) and April 8, 1869 (N.Y.); *Dr. Stillman* (type, Gray; cotype, N.Y.).

***Coreopsis Stillmanii* var. β *Jonesii* Sherff, Bot. Gaz. 97: 605. 1936.**

Herba \pm 2 dm. alta, basi multum ramosa. Capitula ad anthesin 3.5–4 cm. lata et circ. 1 cm. alta. Involucrum glabratum; bracteae exterioribus 8–16, angustissime linearibus, sensim usque ad apicem obtuse truncatum angustatis, 7–12 mm. longis, demum saepe patentibus subreflexisve, quam interioribus oblongo-ovatis paulo brevioribus. Achaenia 4–4.5 mm. longa; corpore ipso nigro, circ. 1 (alis stramineis inclusis circ. 2) mm. lato, glaberrimo vel secundum costam medianam sparsim papillato-hispidulo et alibi interdum paucissimis setulis armato, his apice nunc acribus nunc capitatis.

Type specimen: Collected by *Marcus E. Jones*, No. 3361 pro parte, Pasadena, California, May 2, 1882 (Pom.).

Distribution: Known only from type locality in California.

Specimens examined: *Jones 3361* pro parte (type, Pom.).

14. *Coreopsis petrophila* A. Gray, Proc. Amer. Acad. 22: 428. 1887.

Fruticosa, 6 dm. forsitan quidem 1 m. alta, ramosissima, glabrata, caulibus gracilibus obscure tetragonis, saepe rubescentibus. Folia tenuiter petiolata petiolis 1–2.5 cm. longis, petiolo adjecto 3–6 cm. longa, pinnatipartita, segmentis 5–9 subulato-linearibus, acriter indurato-apiculatis, inaequalibus, majoribus saepius trifidis vel 1–2-dentatis, ultimis 0.6–5 mm. latis. Capitula graciliter breviusculeque pedicellata (pedicellis pubescentibus) et subcymosa, radiata, pansa ad anthesin 2–2.5 cm. lata et circ. 7–8 mm. alta. Involucri campanulati subcriniti bracteae exteriores lineari-oblongae, minutae, tantum circ. 1–2 (–3) mm. longae; interiores oblongae vel oblongo-

ovatae, 5–6 mm. longae. Flores ligulati 5, flavi, integri, ligula oblongi, 8–12 mm. longi, tubulo hispido. Paleae scariosae, angustoblongae vel oblanceolatae, dorso longissime villosissimae, apice trilobatae, quam achaeniorum corpora paulo longiores. Flores tubulosi circ. 6–10, stylorum ramis apice tenuiter hispido-appendiculatis. Achaenia recta, subturgida, obovato-oblonga, nigra, dorso glabra, marginibus intusque longissime villosissima, corpore 3–4.5 mm. longa et 0.7–0.9 mm. lata, apice biaristata aristis tenuibus antrorsum barbellatis 3–4.5 mm. longis.

Type specimen: Collected by *Edward Palmer*, No. 530, hanging loosely about rocks at the entrance of canyons, Río Blanco, State of Jalisco, Mexico, September, 1886 (U.S.).

Distribution: State of Durango and southward into State of Jalisco, Mexico.

Specimens examined: *C. R. Barnes & W. J. G. Land* 158, alt. 1,680 meters, Sierra de Esteban, State of Jalisco, September 28, 1908 (Field); *Edward Palmer* 489, Tejamén, State of Durango, August 21–27, 1906 (Gray; N.Y.); *idem* 530 (type, U.S.; cotypes, Gray; N.Y.); *C. G. Pringle* 2197, cool ledges of barrancas, near Guadalajara, State of Jalisco, November 20, 1888 (Gray); *idem* 2303, rocky bluffs of Río Grande de Santiago, near Guadalajara, September 30, 1889 (Field; Gray; N.Y.) *idem* 11507, alt. 1,500 meters, Sierra de Esteban, near Guadalajara, September 30, 1903 (Berl.; Field; Gray).

15. *Coreopsis petrophiloides* Robins. & Greenm. Proc. Amer. Acad. 29: 388. 1894.

Fruticosa, forsitan 7–9 dm. alta, caulibus plus minusve glabratiss, superne foliosis; ramulis angulatis, paulo pubescentibus. Folia subsessilia vel petiolata petiolis marginatis usque ad 2 cm. longis, omnino 4–9 cm. longa, rigida, simplicia, rhomboideo-lanceolata, acuta, dimidio superiore inciso-serrata, glandulo-punctata, supra paulo pubescentia, infra glabra ac pallidissima. Capitula in inflorescentias terminales corymbosas congregata, tenuiter pedicellata pedicellis bracteatis plerumque 2–6 cm. longis, radiata, pansa ad anthesin 1.5–2.5 cm. lata et 8–10 mm. alta. Involucri bracteae adpresse hispidae, exteriores circ. 6–8, lineari-oblongae, apice rotundatae ac cartilagineae, tergo 3-nervatae, circ. 2–3 mm. longae; interiores ovali-oblongae, 5–7 mm. longae. Flores ligulati \pm 8, flavi, ligula oblongi, apice denticulati, \pm 1 cm. longi. Paleae angustissime rhomboideo-lanceolatae, tergo valde erecto-villosae ventre glaberrimae, apicem acrem versus lateraliter acriterque 3-lobatae

lobo terminali multo longiore, \pm 6–7 mm. longae. Flores tubulosi 5-dentati, stylorum ramis abrupte breviterque angusto-appendiculatis. Achaenia oblongo-linearia, plana, brunneo-nigra, nitida, longitudinaliter obscuro-sulcata, tergo glabrata, marginibus et ventris nervo mediano perspicue erecto-villosa pilis brunneo-albidis, corpore circ. 5–6.5 mm. longa et pilis exclusis 0.5–1 mm. lata, apice biaristata aristis tenuissimis stramineis antrorsum hispidis circ. 4–5.5 mm. longis.

Type specimen: Collected by *Cyrus Guernsey Pringle*, No. 5508, at altitude of 2,400 meters, Nevado de Colima, State of Jalisco, Mexico, May 22, 1893 (Gray).

Distribution: Nevado de Colima of southernmost Jalisco, south-eastwardly through Michoacán into State of Guerrero, Mexico.

Specimens examined: *Brother G. Arsène*, alt. 2,100 meters, Campanario, vicinity of Morelia, State of Michoacán, December, 1910 (U.S.); *idem* 3185, alt. 2,100 meters, Cerros San Miguel, vicinity of Morelia, November 18, 1909 (Gray; Kew; Mo.; N.Y.; Stockh.; U.S., 2 sheets); *idem* 5295, eodem loco, December, 1910 (Gray; Mo.; U.S.); *idem* 6026, alt. 2,200 meters, Cerro Azul, vicinity of Morelia, 1910 (Gray; Mo.; N.Y.; U.S.); *idem* 6060, alt. 2,200 meters, Cerros San Miguel, vicinity of Morelia, November 15, 1911 (Gray; Kew; Mo.; U.S.); *E. W. Nelson* 2185, alt. 2,100–2,550 meters, north-east slope of Sierra Madre, near Chilpancingo, State of Guerrero, December 24, 1894 (U.S.); *idem* 2249, alt. 2,700–3,060 meters, top of Sierra Madre, eodem loco et tempore (U.S.); *Parkinson*, Mexico (Kew; Oxf.); *Pringle* 5508 (type, Gray).

16. *Coreopsis Irmscheriana* Bruns, Mitteil. Inst. Allgem. Bot. Hamburg 8: 81. f. 11, nos. 6–9. 1929.

Herba (ex auctore perennis) 2–3 dm. alta, e radice primaria parce fibrosa 5–15 cm. longa; caule erecto, satis dense folioso, rubescenti, tereti, pilis strictis brevibus aspero, laxe ramoso; ramis decumbentibus vel adscendentibus, teretibus vel quadrangularibus, vix sulcatis, rubescentibus, hirtis, 1–2 dm. longis. Folia caulina opposita, brevissime petiolata vel sessilia, anguste ovato-lanceolata, irregulariter crenato-serrata, usque ad 4 cm. longa et 1.5 cm. lata; ramulorum alternantia, saepius sessilia, utrinque pilis rigidis sparse adpresseque hirsuta, plerumque sub 2.3 cm. longa et 0.7 cm. lata. Capitula solitaria ad apices ramorum superne subnudorum dense hirsutorum, radiata, pansa ad anthesin 3–3.5 cm. lata et saltem 1 cm. alta. Involucri bractee \pm 16 irregulariter biseriales, lineari-

oblongae, dense hirsutae, usque ad 8 mm. longae et 2 mm. latae. Flores ligulati ± 12 , aurei, ligula oblongi, circ. 1.4–1.6 cm. longi et ± 4 mm. lati. Paleae margine serratae, apice longe acutae, circ. 6 mm. longae. Flores tubulosi lutei, ± 7 mm. longi; tubo inferne piloso; limbi lobis intus pilosis. Achaenia obcompressa, nigra, pilosa, biaristata aristis ciliato-pilosis.

Type specimen: Collected by *Ernesto Guenther* and *Otto Buchtien*, No. 55, at altitude of 30 meters, in the Ravine ("Schlucht") of Chule, Mejía, Lomas, Peru, November 12, 1923 (Hamb., 2 sheets).

Distribution: Known only from type locality in southern Peru.

Specimens examined: *Guenther & Buchtien 55* (2 type sheets, Hamb.; cotype, Mun., from its photograph in Field).

17. *Coreopsis rhyacophila* Greenm. Proc. Amer. Acad. 35: 313. 1900.

Suffruticosa, erecta, glabra, 3–10 dm. alta, caulibus teretibus, griseo-brunneis vel brunneo-rubrescentibus, foliosis. Folia opposita petiolata petiolis tenuibus usque ad circ. 6 cm. longis, petiolo adjecto usque ad 11 cm. longa, plerumque 2–3-pinnatisecta, utrinque glabra, glanduloso-punctata, segmentis linearibus vel anguste oblongo-lanceolatis, apice acutis vel acerrimis, membranaceis, saepius 2–5 mm. latis. Capitula corymbosa, non numerosa, tenuiter pedicellata pedicellis glabris nudis vel 1–3-bracteatis saepius 5–7 cm. longis, radiata, pansa ad anthesin 2.5–3 (rarius 4.5) cm. lata et circ. 8–11 mm. alta. Involucri bracteae exteriores circ. 8, patentes vel reflexae, lineares, apice subacutae, basi saepe sparsim hispidae, 4–6 mm. longae; interiores late oblongo-ellipticae, apice pubescentes, 7–9 mm. longae. Flores ligulati 7–10, flavi, ligula elliptico-oblongi, apice plerumque integri, 1.4–2.3 cm. longi. Paleae lineari-oblongae, cum fructu deciduae, ad hujus faciem exteriorem applicatae, apice acres et saepe 1–2-lobatae, dorso ac margine erecto-villosissimae, ventre glabrae, 5–6 mm. longae. Florum tubulosorum styli ramosi, ramis conico-appendiculatis. Achaenia obcompressa, cuneate lineari-oblongata, nigra, dorso glabra, margine ac ventris costa mediana erecto-villosissima, corpore circ. 4 mm. longa et circ. 0.8 mm. lata, apice tenuiter biaristata aristis albidis antrorsum hispidis circ. 3–4 mm. longis.

Type specimen: Collected by *Cyrus Guernsey Pringle*, No. 7866, at altitude of 2,500 meters, in lava fields near Cuernavaca, State of Morelos, Mexico, February 9, 1899 (Gray).

Distribution: States of Michoacán and Morelos, southern Mexico.

Specimens examined: *Brother G. Arsène*, Cerro Azúl, District of Morelia, State of Michoacán, October, 1909 (Field); *Pringle 7866* (type, Gray); *idem 8332*, alt. 2,400 meters, lava fields above Cuernavaca, State of Morelos, May 5, 1900 (Berl.; Field; Gray; N.Y.; Pom.); *idem 8431*, alt. 2,550 meters, eodem loco, October 13, 1900 (Field; Gray; N.Y.; Pom.); *idem 9886*, eodem loco, November 19, 1902 (Berl.; Field; Gray; N.Y.).

18. *Coreopsis Pringlei* Robins. Proc. Amer. Acad. 43: 41. 1907.

Fruticosa, ramosa, ramis glabris teretibus cortice ochraceo-griseo obtectis, ramulis striatis viridibus plus minusve 6-angulatis foliosis. Folia opposita petiolata petiolis \pm 1 cm. longis ac saepe marginatis, petiolo adjecto 2-4 cm. longa et 1-3 cm. lata, bipinnatifida, pallide viridia, glaberrima vel vix pilosiuscula, segmentis patentibus angustissime linearibus leviter acutatis integris vel cum lobis secundariis paucis instructis 4-18 mm. longis et 0.6-0.8 mm. latis. Capitula ramulos terminantia solitaria vel corymbose 3-5-aggregata, tenuiter pedunculata pedunculis 1-5 cm. longis nudis vel in mediana parte cum bractea unica lineari instructis, erecta vel nutantia, radiata, pansa ad anthesin 2-3 cm. lata et 7-9 mm. alta. Involucri campanulati bractee exteriores circ. 8, lineari-oblongae, apice rotundatae basi pilosiusculae, 3-5 mm. longae et 1 mm. latae; interiores oblongo-ovatae, circ. 6-8 mm. longae. Flores ligulati circ. 8, juventate supra aurei subtus flavidi maturitate laete flavi, ligula oblongi, apice integri, circ. 1.2 cm. longi et 4-6 mm. lati. Paleae lineari-oblongae, cum fructu deciduae, ad hujus faciem anteriorem applicatae, apice eroso-ciliatae, circ. 5 mm. longae. Stylorum rami pro floribus tubulosis anguste conico-appendiculati. Achaenia vix matura obcompressa, cuneate lineari-oblancoolata, dorso obscure circ. 4-costata et glabra vel sparsim erecto-villosa, facie ventrali et marginibus erecte villosissima, corpore nigro circ. 5 mm. longa, apice tenuiter biaristata aristis albidis antrorsum hispidis circ. 3-4 mm. longis.

Type specimen: Collected by *Cyrus Guernsey Pringle*, No. 10050, at altitude of 2,040 meters, on dry ledges, San Juan del Río, State of Querétaro, Mexico, September 8, 1905 (Gray).

Distribution: Known only from type locality in State of Querétaro, Mexico.

Specimens examined: *Pringle 10050* (type, Gray; cotypes, Berl.; Field; N.Y.; U.S.).

19. *Coreopsis rudis* (Benth.) Benth. & Hook. ex Hemsl. Biol. Centr. Amer. Bot. 2: 196. 1881. *Epilepis rudis* Benth. Pl. Hartweg. 17. 1839.

Fruticosa, erecta, hispida, foliosa, forsitan 7–9 dm. alta. Folia opposita petiolata petiolis anguste alato-marginatis circ. 1–2 cm. longis, petiolo adjecto circ. 4–7 cm. longa, vix rigidula, pinnatisecta, segmentis cuneatis lanceolatisve nunc integris nunc grosse dentatis pinnatifidisve, saepius 3–10 mm. latis. Capitula corymboso-paniculata pedicellis tenuibus plerumque 0.5–1.5 cm. longis, radiata, pansa ad anthesin circ. 2.5 cm. lata et circ. 8–10 mm. alta. Involucri campanulati bracteae exteriores circ. 6, oblongae, obtusae, circ. 3–4 mm. longae, interioribus late oblongo-obovatis dimidio breviores. Flores ligulati circ. 5, flavi, ligula ovali-oblongi, neutri, apice sub-integri vel plus minusve denticulati. Paleae cum fructu deciduae, ad hujus faciem anteriorem applicatae, dorso valde longeque erecto-villosae, ventre glaberrimae, apice trifidae, circ. 5–6 mm. longae. Flores tubulosi 5-dentati, stylorum ramis cono superatis. Achaenia obcompressa, anguste lineari-oblongata, dorso circ. 4-costato glabra, marginibus villosissima, ventre praeter lineam villosam glabra, corpore subnigro 4–5 mm. longa et circ. 0.7–0.8 mm. lata, apice tenuiter biaristata aristis stramineis antrorsum hispidis circ. 2–3 mm. longis.

Type specimen: Collected by *Theodor Hartweg*, No. 116, in pine forests, Bolaños, Cantón of Colotlán, State of Jalisco, Mexico, 1836–1838 (Kew).

Distribution: Known only from type locality in Cantón of Colotlán, State of Jalisco, Mexico.

Specimens examined: *Hartweg 116* (type, Kew; cotypes, Berl.; Gray).

Bentham described the ray flowers as neuter, but Bentham and Hooker (Gen. Pl. 2: 386, sub *Epilepide*. 1873) described them as fertile. In the fruiting heads before me they are completely sterile.

20. *Coreopsis glaucodes* Blake & Sherff ex Sherff, Bot. Gaz. 80: 369. 1925.

Frutex glaberrimus, 1 m. altus, partibus novellis glaucescentibus, caule tereti subgriseo, ramis ramulisque striatis, parce angulatis, subbrunneis, glaucescentibus, internodiis 1–6 cm. longis. Folia opposita tenuiter petiolata petiolis basi in poculum circ. 1 mm. altum connatis, 4–10 mm. longis, petiolo adjecto circ. 1.5–3.5 cm. longa et 6–18 mm. lata, circumambitu saepius cuneata vel rhombica

rarius deltoidea, ad medium vel ultra 3- (vel etiam 4-) lobata et in petiolum cuneate decurrentia, lobis cuneatis vel oblanceolatis vel lineari-lanceolatis vel lanceolatis, acutis, integris (interdum terminali rarius etiam lateralibus 2-3-dentatis), membranaceis, pallido-viridibus, glaucescentibus, plerumque 6-16 mm. longis et 1.5-3.5 mm. latis. Capitula parva 1-4 ad apices ramorum, tenuiter pedunculata pedunculis 1.5-5.5 cm. longis, radiata, pansa ad anthesin 1.2-2 cm. lata et 5-7 mm. alta. Involucri glabri glaucescentisque bracteae exteriores 8, anguste triangularibus, obtusae, 3-nerviae, 2-2.5 mm. longae et 0.2-0.5 mm. latae; interiores oblongae, obtusae, apice obscure ciliolatae, multinerviae, flavo-marginatae, glaucescentes, 5-7 mm. longae et circ. 1.8 mm. latae. Flores ligulati 8, aurei, ligula oblongi, subintegri, circ. 8-nervii, \pm 7.5 mm. longi et \pm 3.2 mm. lati. Paleae oblongae, subacutae vel obtusae, circ. 5-nerviae, ad lineam medianam pilosae, apice eroso-spinulosae, \pm 4.5 mm. longae. Disci florum stigmata deltoidea, hispidula, apiculata. Achaenia oblanceolato-oblonga, obcompressa, griseo-nigra, dorso glabra, marginibus piloso-ciliata, apice ciliata, ventre ad costam medianam sparsim pilosa, corpore 3.5-4 mm. longa et 1.8 mm. lata, biaristata aristis sursum ciliatis, 1.5-2 mm. longis.

Type specimen: Collected by *August Weberbauer*, No. 4048, in the open formation, at altitude of 2,600 meters, below Hacienda La Tahona, near Hualgayoc, Department of Cajamarca, Peru, May 15, 1904 (Berl., 2 sheets).

Distribution: Known only from type locality.

Specimens examined: *Weberbauer 4048* (2 type sheets, Berl.).

21. *Coreopsis microlepis* Blake & Sherff ex Sherff, Bot. Gaz. 80: 370. 1925.

Frutex + 4 dm. altus, caule tenui sub inflorescentia plerumque simplici raro ramis paucis erectis simplicibus ramoso, usque ad 1.8 mm. crasso, hexagono, glabro vel in lineis posita sub nodis plus minusve hispidulo, internodiis 1.3-5 cm. longis, quam foliis plerumque longioribus. Folia opposita tenuiter petiolata petiolis superne submarginatis inferne hirsuto-ciliatis 4-10 mm. longis basi in poculum connatis, lamina circumambitu deltoidea paene ad costam trilobata, 8-21 mm. longa et 7-22 mm. lata, segmentis membranaceis, glabra, margine saepe revolutis, acriter apiculatis, lateralibus cuneatis vel elliptico-obovatis vel spathulatis, integris vel 2-3-dentatis, 5-11 mm. longis et 2-6 mm. latis, terminali 3-4-lobato saepius usque circ. ad medium lobis integris vel 2-3-dentatis. Capitula mediocria 3-15

cymam vel paniculam nudam efficientia rarius solitaria, pedicellata pedicellis pilosis 1.5–5 cm. longis, radiata, pansa ad anthesin circ. 1.5–2 cm. lata et 6–7 mm. alta. Involucri glabri vel basi ipso hispiduli bracteae exteriores 8–9, ovatae vel oblongo-ovatae, subobtusae, 1.5–2 mm. longae et 0.6–0.8 mm. latae; interiores elliptico-oblongae, obtusae, facie subnigrae margine angusta flavidae, 6–7 mm. longae et circ. 2.2 mm. latae. Flores ligulati verisimiliter 8, aurei, ligula oblongo-ovati, subintegri, circ. 7-nervii nervis principalibus dorsaliter sparsimque hirsutulis, \pm 6.7 mm. longis et 3 mm. latis. Paleae obovatae, obtusae vel acutae, circ. 6-nerviae, ad lineam medianam pilosae, circ. 4.5 mm. longae. Disci florum stigmata incrassata, hispidula, abrupte apiculata. Achaenia obovata vel oblonga, griseo-nigra, longe piloso-ciliata et duabus faciebus pilosa, corpore 2.8–3.5 mm. longa et circ. 1.2 mm. lata, biaristata aristis subpaleaceis, sursum piloso-ciliatis, 0.8–1.2 mm. longis.

Type specimen: Collected by *Alexander Mathews*, No. 1418, Province of Chachapoyas, Department of Amazonas, Peru, 1835–1836 (Kew, 2 sheets).

Distribution: Known only from type locality.

Specimens examined: *Mathews 1418* (2 type sheets, Kew); *A. Raimondi 1774*, road between Chacapoyas and Cheto, Peru, March, 1869 (Berl.).

22. *Coreopsis Macbridei* Sherff, Bot. Gaz. 89: 369. 1930.

Frutex glabratus, ramosus, caulibus subteretibus. Folia laxè disposita, opposita, petiolata petiolis tenuibus circ. 1–1.5 cm. longis, primaria petiolo adjecto etiam 4–4.5 cm. longa, pinnatim 5–7-secta, segmentis anguste linearibus, glaberrimis, apicaliter acribus, 1–2.5 cm. longis et 1–1.7 mm. latis. Capitula corymboideo-paniculata, numerosa, tenuissime pedunculata (vel pedicellata) pedunculis saepius 3–7.5 cm. longis glaberrimis vel apicem versus vix pubescentibus, radiata, pansa ad anthesin tantum circ. 2 cm. lata et 6–9 mm. alta. Involucri glabrati sicci subnigri bracteae exteriores circ. 8, lineari-oblongae, obtusae, tantum circ. 1.5–2 mm. longae; interiores oblongo-ovatae circ. 5–6 mm. longae. Flores ligulati circ. 8, fusco-flavi, ligula lineari-elliptici, apicaliter integri vel rarius denticulati, tantum circ. 8–10 mm. longi et 1.5–3 mm. lati. Paleae lineari-oblongae, circ. 5-striatae, tergo villosissimae ventre glabrae cum achaenio deciduae. Disci florum stigmata incrassata et minutissime caudato-appendiculata. Achaenia lineari-oblancoolata, valde obcompressa, dorso sub palea glabra, ventre ad costam medi-

anam villosa, marginibus longe perspicueque villosa-ciliata, apice biaristata aristis sursum villosis circ. 2 mm. longis.

Type specimen: Collected by *J. Francis Macbride*, No. 3504, neat compact half-shrub (or shrub) of southwestern rock outcrops, alt. about 2,100 meters, Huánuco, Peru, April 26, 1923 (Field).

Distribution: Peru.

Specimens examined: *Macbride 3152*, ragged shrub, river canyon slopes, alt. about 2,100 meters, Ambo, April 4, 1923 (Field; U.S.); *idem 3504* (type, Field; cotype, U.S.).

The specimens examined had been determined by Dr. S. F. Blake as a form of *Coreopsis Townsendii* Blake, with more leaf lobes than on the type. A careful comparison with the type of that species, however, shows many striking differences. *C. Macbridei* has a more scraggly habit; its leaves are fewer, their petioles narrower, and their divisions 5–7 rather than usually 3; the capitula are more numerous (more than 30 on one sheet), their peduncles and involucre almost completely glabrous (not conspicuously tomentose), their external bracts about 1.5–2 mm. (not 4–4.5 mm.) long, their diameter at flowering about 2 cm., not 2.5–3 cm., the ligules deep yellow (not light yellow) and only about 8–10 mm. long and 1.5–3 mm. wide, not 15–18 mm. long and 5–7 mm. wide, etc.

23. *Coreopsis Killipii* Sherff, Bot. Gaz. 94: 594. 1933.

Fruticosa, glabra, 6–12 dm. alta, ramosa ramis tenuibus angulatis internodiis quam foliis longioribus. Folia petiolata petiolis moderate ciliatis circ. 4–13 mm. longis basi in poculum \pm 1.5 mm. altum connatis, petiolo adjecto circ. 1.5–2.5 cm. longa, pinnatim vel subbipinnatim divisa, segmentis ultimis saepius oblongo-linearibus crassiusculis eciliatis planis vel vix revolutis apice acutis subacutisve. Capitula pauca, in pedunculis ramos elongatos superne nudatos terminantibus \pm 1–1.2 cm. longis disposita, radiata, pansa ad anthesin \pm 2.6–2.8 cm. lata et \pm 0.8–1 cm. alta. Involucrum tantum ad basim ipsam hispidum, bracteis exterioribus circ. 8, oblongis, eciliatis, apice obtusis vel rotundatis, 3–5 mm. longis et 1–1.7 mm. latis; interioribus ovato-oblongis, siccis plus minusve atris, apicem versus vix ciliatis, 7–10 mm. longis. Flores ligulati forsitan 5 vel 6, brunneo-flavi, ligula elliptico-oblongi, apice integri vel parce denticulati, circ. 1.2 cm. longi. Paleae spathulato-oblanco-latae, dorso (praecipue ad costam medianam) hispidae ventre glaberrimae, apicem acutum versus ciliatae, circ. 5–6 mm. longae ad corpus achenii strictim applicatae. Flores tubulosi subbrunneo-flavi, stylorum ramis incrassatis apice subito breviterque conico-

appendiculatis. Achaenia valde obcompressa, cuneato-oblanceolata, nigra vel fere purpurascens-nigra, dorso glaberrima, ventre marginibusque perspicue erecto-pilosa pilis elongatis sericeis, corpore 4–5 mm. longa, apice biaristata aristis linearibus stramineis antrorsum hispidis 1.5–2.5 mm. longis.

Type specimen: Collected by *Ellsworth P. Killip* and *Albert C. Smith*, No. 21823, straggling shrub 2–4 feet high, open hillside at altitude of 3,000–3,200 meters, Tarma, Department of Junín, Peru, April 20–22, 1929 (Field).

Distribution: Known only from type locality in Peru.

Specimens examined: *Killip & Smith 21823* (type, Field).

24. *Coreopsis parviceps* Blake & Sherff ex Sherff, Bot. Gaz. 80: 368. 1925.

Frutex glaberrimus, caule tereti, striatulado, griseo, ramis ramulisque tenuibus striato-angulatis subbrunneis, internodiis 1.5–4 cm. longis. Folia opposita petiolata petiolis tenuibus basi in pocula breviter et vix ciliolata connatis 3–8 mm. longis; laminis inferioribus circumambitu deltoideis, circ. 2.2 cm. longis et usque ad 2.8 cm. latis, irregulariter 2–4-partitis, crassiusculis, minutissime punctulatis, segmentis linearibus vel lineari-ellipticis 9–16 mm. longis et 1.8–3 mm. latis perlucidule pinnato-venosis apice acutis; superioribus integris vel interdum trilobatis, lineari-ellipticis, 8–19 mm. longis et 1.5–3 mm. latis. Capitula parva, solitaria, tenuiter pedunculata pedunculis glabris \pm 2.7 cm. longis, radiata, pansa ad anthesin circ. 1.8 cm. lata et circ. 6 mm. alta. Involucri bracteae exteriores 6–8, lineari-oblongae, glabrae, apice obtusae, circ. 3 mm. longae et 0.8 mm. latae, interiores late lanceolato-oblongae, apice obtusae et eroso-denticulatae, circ. 6 mm. longae et 2.5 mm. latae. Flores ligulati circ. 8, aurei, ligula late oblongo-ovati, circ. 12-nervi, apice subintegri ac submarginati, circ. 9 mm. longi et 4 mm. lati. Paleae oblongo-obovatae, dorso sparsim pubescentes, circ. 5-nerviae, apice truncatae vel emarginatae plus minusve spinuloso-ciliatae, circ. 3.5 mm. longae. Disci florum stigmata deltoideo-triangularia, acuminata, hispidula. Achaenia valde immatura oblonga, piloso-ciliata, ventre ad costam medianam sparsim pilosa, apice ciliata ac biaristata aristis sursum piloso-ciliatis, 2 mm. longis.

Type specimen: Collected by *Const. De Jelski* (distrib. *Ign. Szyzylowicz*), No. 765, Tambillo, Peru, August 19, 1878 (Berl., 2 sheets).

Distribution: Known only from type locality.

Specimens examined: *De Jelski 765* (2 type sheets, Berl.).

25. *Coreopsis oblanceolata* Blake, Contr. U. S. Nat. Herb. 22: 642. 1924.

Frutescens, caule gracili, glabro, internodiis inferioribus moderate brevioribus superioribus multo longioribus quam foliis. Folia opposita, oblanceolata, integra, coriacea, glabra, apice acutiuscula obtusave et obtuse callosio-mucronulata, de loco diametri maximi sensim in basim petiolo saepe similem angustata, parce revoluta, manifeste unicostata venis lateralibus obscuris, utrinque viridia, circ. 2.5–3.8 cm. longa et circ. 5–7.5 mm. lata. Capitula solitaria vel perpauca, pedunculata pedunculis subtenuibus usque ad 11 cm. longis, radiata, pansa ad anthesin \pm 4 cm. lata et \pm 1.2 cm. alta. Involucri bractee exteriores circ. 8, anguste oblongae, basi parce angustatae et sparsissime pubescentes, apice rotundatae vel obtusae, marginibus breviter hispidae, 3-vittatae, circ. 5.5 mm. longae et circ. 1.8 mm. latae; interiores oblongo-ovatae, acutae acuminataeve, apice eroso-ciliatae, circ. 7.5 mm. longae. Flores ligulati \pm 8, flavi, ligula elliptico-oblongi, apice bidentati, \pm 2 cm. longi et \pm 6 mm. lati. Paleae elliptico-ovatae, acuminatae, inferne ciliatae, apicem versus eroso-ciliatae, \pm 5 mm. longae. Flores tubulosi flavi, tubi apice pilosi; styli ramis termino breviter triangulatis et acutis. Achaenia immatura valde obcompressa, oblongo-elliptica, ventre pubescentia, dense longo-ciliata, apice setosa, corpore circ. 4 mm. longa, biaristata aristis lanceolato-linearibus, subaequalibus, dense antrorsumque hispidis, circ. 2.2 mm. longis.

Type specimen: Collected by *Charles Henry Tyler Townsend*, No. A211, at altitude of 2,400–2,850 meters, on top of the western Cordillera opposite Huancabamba, Peru, September 26, 1911 (Field).

Distribution: Known only from type locality in northernmost Peru.

Specimens examined: *Townsend A211* (type, Field).

25a. *Coreopsis Woytkowskii* sp. nov.

Fruticosa, usque ad 7 dm. alta; ramulis sulculatis albido-tomentosis. Folia opposita subtenuiter petiolata petiolis marginatis conduplicatis hispido-ciliatis et faciebus plus minusve setosis usque ad circ. 1.5 cm. longis, petiolo adjecto usque ad 5.5 cm. longa et 0.8–1.5 cm. lata, oblongo-oblanceolata, supra medium vel apicem versus pauciserrata (1–3 dentibus pro utroque latere), apice acuta rarius subtruncata sub medio usque ad petiolum sensim vel curvescente angustata, submembranacea, utrinque minutissime numerosissime-

que glandulo-papillata sed non vel secundum venulas hispidula, suaveolentia. Capitula solitaria ad ramulorum apices disposita, pedunculata pedunculo nitide albo-lanato circ. 2.5–4 cm. longo, radiata, pansa ad anthesin 4–4.5 cm. lata et 1.3–1.8 cm. alta. Involucrum extus basi perspicuissime alibi moderate sparsimve albo-lanatum; bracteis exterioribus ± 6 , oblongis, supra medium dilatatis, apice rotundis, tergo 3-nervatis et minutissime glandulo-papillatis, circ. 8 mm. longis et 2–2.6 mm. latis; interioribus oblongo-ovatis \pm dimidio longioribus. Flores ligulati 8, intense lutei, ligula obovati, apice obscure 2- vel 3-denticulati, ± 2 cm. longi, tubo ovarioque plus minusve albo-pilosis. Paleae oblongo-lineares, dorso longissime erecteque sericeo-pilosae, ventre glabrae, apice eroso-emarginatae, ± 7 mm. longae. Achaenia matura non visa; valde immatura plana, cuneate linearia, dorso glabra, ventre marginibusque elongate erecteque sericeo-pilosa, apice biaristata aristis tenuissimis antrorsum hispidis corollis subaequalibus.

Type specimen: Collected by *Felix Woytkowski*, No. 24, on rocky hills at altitude of 2,625 meters, vicinity of Celendín, Department of Cajamarca, Peru, June 5, 1936 (Field).

Distribution: Known only from type locality in Peru.

Specimens examined: *Woytkowski 24* (type, Field).

The collector's notes state that this species "grows in profusion in some places." It is very easily distinguishable in its foliage from all other South American species of *Coreopsis*. Fortunately, the type, though collected but very recently, was received in time to be treated in this work. To Mr. Paul C. Standley, Associate Curator of the Herbarium of Field Museum of Natural History, I am indebted for the privilege of examining it.

26. *Coreopsis longula* Blake, Contr. U. S. Nat. Herb. 22: 642. 1924.

Frutex glaber, verisimiliter circ. 1 m. altus, caule ramisque tenuibus et multiangulato-striatis, internodiis quam foliis saepius brevioribus. Folia opposita interdum cum fasciculis axillaribus, simplicia, flagellari-linearia, basi in poculum circ. 1 mm. altum connata, crassiuscula, subrevoluta, sicca minutissime numerosissimeque albido-punctulata, eciliata, apice obtusiusculo cartilagineo-indurata, saepius 4–7.5 cm. longa et 0.6–1.1 mm. lata. Capitula non pauca, pedunculata pedunculis tenuibus 1–4 cm. longis, radiata, pansa ad anthesin ± 2.4 cm. lata et circ. 8 mm. alta. Involucri glabrati bractee exteriores circ. 8, oblongo-lineares, obtusae,

2.5–4 mm. longae et 0.4–0.6 mm. latae; interiores oblongo-lanceolatae, flavo-marginatae, apice obtuso subtruncatae et eroso-denticulatae, 7–8.5 mm. longae et 2–2.5 mm. latae. Flores ligulati circ. 8, flavi, ligula elliptico-oblongata, apice integri vel obscure denticulati, circ. 1.2 cm. longi et 2.5–3.5 mm. lati. Paleae oblongo-lineares, obtusiusculae, 5–7-striatae, glabrae vel dorsaliter ad costam medianam hispidae, 7–8.5 mm. longae et 0.6–1 mm. latae. Disci florum stigmata incrassata, breviter obscureque crasso-apiculata. Achaenia lineari-oblonga, obcompressa, atra, corpore circ. 7 mm. longa et circ. 1 mm. lata, dorso leviter ventre marginibusque graviter sursum pilosa, apice sursum pilosa et vestigio floris minutissimo coronata et biaristata aristis sursum hispidis 2.5–3 mm. longis.

Type specimen: Collected by *Alexander Mathews*, in the Province of Chachapoyas, Peru, 1835–1836 (Gray).

Distribution: Known only from type locality.

Specimens examined: *Mathews*, Province of Chachapoyas, Peru (type, Gray); *idem*, eodem loco, sine anno (Kew) et 1835 (Kew) et 1836 (Kew, 2 sheets).

27. *Coreopsis venusta* HBK. Nov. Gen. et Sp. 4: 180 (229). 1820.

Frutex ramosus, erectus vel procumbens, ramis teretibus glabris striatis, ramulis tetragonis, striatis; omnibus internodiis plerumque 0.6–3 cm. longis. Folia opposita, indivisa, anguste spathulato-lineariter, apice acutiuscula, basi angustata, integerrima, exsiccata subcoriacea, subuninervia, eciliata, supra glabra, infra ad costam medianam hispida, 1.5–4 cm. longa et 0.8–1.5 mm. lata. Capitula solitaria, tenuiter pedunculata pedunculis glabratis 5–15 cm. longis, radiata, pansa ad anthesin circ. 2.5 cm. lata et 6–8 mm. alta. Involucrum plus minusve hispidi bracteae exteriores circ. 8, oblongae, obtusae, circ. 3.5–4 mm. longae et 1–1.5 mm. latae; interiores ovato-ellipticae, obusae, multinerviae, margine angusto flavidae aliter atrobrunneae, 5–6 mm. longae. Flores ligulati 6–8, aurantiaci, ligula oblonga, apice obsolete tridentata vel subintegri, circ. 12 mm. longa et 5–6 mm. lata. Paleae oblanceolatae, tenuissime membranaceae, flavi, perspicue atronervatae circ. 6 nervis, supra laciniato-ciliatae, circ. 6 mm. longae. Disci florum stigmata incrassata, hispida, apicaliter brevi-caudata. Achaenia lineari-oblonga, obcompressa, brunneo-atra, tergo sub palea glabra, margine piloso-ciliata, ventre hispida saepe plus minusve tuberculata, corpore circ. 5 mm. longa et 1–1.2 mm. lata, apice biaristata aristis sursum piloso-ciliatis circ. 3 mm. longis.

Type specimen: Collected by *Alexander Humboldt* and *Aimé Bonpland*, near Loja (Loxa), Province of Loja, Ecuador (Par.).

Distribution: Ecuador and Peru.

Specimens examined: *A. S. Hitchcock* 21564, alt. 2,200–3,100 meters, Páramo between San Lucas and Oña, Province of Loja, Ecuador, September 7, 1923 (Gray; N.Y.; U.S.); *Humboldt & Bonpland*, near Loja, Ecuador (cotype, Berl.); *idem*, Páramo de Saraguro, Ecuador (Berl.); *A. Raimondi* 6463, Callacate, Department of Cajamarca, Peru, May, 1879 (Berl.); *idem* 12060, Huambo, Province of Chota, Department of Cajamarca, Peru, June, 1868 (Berl.).

28. *Coreopsis nodosa* Sherff, Bot. Gaz. 94: 595. 1933.

Fruticosa, forsitan 6–8 dm. alta, ramosissima ramulis nunc subteretibus nunc valde angulatis glanduloso-puberulis internodiis numerosissimis plerumque 1–4 rarius usque ad ± 10 mm. longis et circ. 1–1.5 mm. crassis. Folia numerosissima opposita, petiolata petiolis plus minusve hispido-ciliatis basi in poculum minutum connatis 1–5 mm. longis (parte inferiore ad ramulos juncta manente post casum foliorum), petiolo adjecto tantum circ. 7–9.5 mm. longa, glabra, pinnatim 3–7-partita segmentis crassiusculis oblongis vel ovato-oblongis sparsim hispidulis apice subobtusum-mucronatis plerumque tantum 2–3.5 mm. longis et 0.4–0.7 mm. latis. Capitula tenuiter pedunculata pedunculis (supra summa folia) circ. 1 cm. longis, radiata, pansa ad anthesin ± 1.8 cm. lata et 7–8 mm. alta. Involucri basaliter tomentuloso-hispidi bractee exteriores circ. 8, cuneato-oblongae, longitudinaliter 3-vittatae, glabratae, apice obtusissimae vel rotundatae, 2–3 mm. longae; interiores cuneato-oblongae apice obtusissimae 4–7 mm. longae. Flores ligulati 6–8, claro-flavi, ligula elliptico-oblongi, apice integri, ± 8 mm. longi. Paleae lineari-oblongae, dorso marginibusque erecto-hispidae ventre glabratae, apice acutae, 5–6 mm. longae, ad corpus achaenii strictim applicatae. Achaenia valde obcompressa, cuneate lineari-oblonga, atra, duabus faciebus praesertim ventrali ac marginibus valde erecto-setosa setis longis albidis sericeis, corpore circ. 4 mm. longa, apice biaristata aristis tenuibus stramineis antrorsum setosis 1–1.8 mm. longis, inter aristas poculo minuto coronata.

Type specimen: Collected by *Francis W. Pennell*, No. 13646, open, rocky slope, at altitude of 2,900–3,100 meters, Ollantaitambo, Department of Cuzco (Cusco), Peru, April 26, 1925 (Field).

Distribution: Known only from type locality in Peru.

Specimen examined: *Pennell* 13646 (type, Field).

29. *Coreopsis senaria* Blake & Sherff ex Sherff, Bot. Gaz. 80: 367. 1925.

Frutex ramulis hexagonis, lineatim (2 lineis) hispidulis, infra foliorum basibus persistentibus vestitis, internodiis usque ad 10 mm. longis. Folia opposita cum fasciculis axillaribus, brevissime petiolata petiolis tantum circ. 1–1.5 mm. longis glabris omnino connatis; laminis 3-partitis, segmentis anguste lineari-oblongeolatis, apice acutis callosisque, margine integris, carnosus, atro-viridibus, glabris, 1-nerviis, circ. 6–8 mm. longis et 0.6–0.9 mm. latis. Capitula solitaria in pedunculis brevissimis (usque ad 1 cm. longis) hirtellis insidentia, radiata, pansa ad anthesin circ. 2 cm. lata et 7 mm. alta. Involucri bracteae exteriores manifeste biseriales, omnino circ. 18, subaequales, herbaceae, lanceolatae vel lineari-lanceolatae, obtusae vel subacutae, saepe apiculatae, 3-nerviae, infra medium ciliatae, dorso glabrae, 4–5 mm. longae et 1 mm. latae; interiores 8–9, membranaceae, oblongae, obtusae, margine angusto flavidae aliter brunneae, ciliolatae sed faciebus glabrae, circ. 2.5 mm. latae. Flores ligulati circ. 8, aurei, ligula oblongo-ovati, circ. 11-nervati, circ. 6 mm. longi et 3 mm. lati. Paleae lanceolatae, acuminatae, ciliatae, ad lineam medianam pilosae, 5-nerviae, circ. 4 mm. longae. Achaenia valde immatura obovato-oblonga, margine apiceque piloso-ciliata, facie exteriore glabra interiore aegre pilosa, biaristata aristis sursum piloso-ciliatis, circ. 2.2 mm. longis.

Type specimen: Collected by A. Stübel, No. 35 pro parte, on punas, on an excursion from Pacasmayo to Moyobamba, Peru, April to June, 1875 (Berl.).

Distribution: Peru.

Specimens examined: *A. Raimondi* 436, heights between Balsas and Celendín, departments of Amazonas and Cajamarca, Peru, April, 1869 (Berl.); *Stübel* 35 pro parte (type, Berl.); *Felix Woytkowski* 23, growing up to 6 dm. tall, common, on rocky hills, alt. 2625 m., vicinity of Celendín, Department of Cajamarca, Peru, June 5, 1936 (Field).

The leafy branchlets have a juniperous aspect. The numerous outer bracts of the involucre also afford a ready means of determination.

30. *Coreopsis foliosa* A. Gray, Proc. Amer. Acad. 5: 125. 1861.

Frutex ramosus, caule ramisque subquadrilateralibus striatis hispidis fere occultis. Folia numerosissima opposita glabra petiolata petiolis planis circ. 3–9 mm. longis, petiolo adjecto 1.2–2 cm. longa, lamina nunc digitato-ternata nunc pinnatim 4–7-partita, segmentis

oblanceolatis, crassiusculis, apice obtusiusculis, basim versus angustatis, faciebus minutissime densissimeque albido-punctulatis, margine saepe revolutis, 4–8 mm. longis et 1–1.6 mm. latis. Capitula terminalia, breviter pedunculata pedunculis hispidis tenuibus 0.5–2 cm. longis, radiata, pansa ad anthesin circ. 2.8–3.4 cm. lata et 1.2 cm. alta. Involucri hispidi bracteae exteriores circ. 8, oblongae, apice rotundatae, circ. 5 mm. longae et 1.5 mm. latae; interiores lanceolatae apicaliter obtusae et interdum suberosae circ. 8 mm. longae. Flores ligulati circ. 8, ligula anguste obovati, apice plus minusve denticulati, 1.5–1.9 cm. longi. Paleae late lineari-oblongae, apice obtuso minute erosae, circ. 6 mm. longae et 1 mm. latae. Disci florum stigmata rotundo-incrassata, breviter apiculata. Achaenia late oblanceolata, nigra, piloso-ciliata, una facie perspicue altera leviter pilosa, corpore circ. 5 mm. longa et 1.8 mm. lata, apice biaristata aristis sursum hispidis circ. 3 mm. longis.

Type specimen: Collected by *Alexander Mathews*, No. 1376, Taulia, Peru, in 1835 (Kew).

Distribution: Known only from type locality.

Specimens examined: *Mathews 1376* (type and cotype, Kew).

31. *Coreopsis polyactis* Blake & Sherff ex Sherff, Bot. Gaz. 80: 372. 1925.

Frutex densissime foliosus, 1 m. altus, ramis subteretibus ac sordido-hirsutulis, internodiis 4–14 mm. longis. Folia opposita petiolata petiolis plus minusve ciliatis ad basim in poculum hirsutulorum 1 mm. altum connatis, petiolo adjecto 1–1.6 cm. longa, in specimenibus siccis plerumque subflavescentia, tripartita, segmentis integris vel terminali tripartito, linearibus vel anguste lineari-oblanceolatis, 3–6 mm. longis et 0.5–1 mm. latis, acutis, crassis, sparsim hirsutulis praecipue ad margines; axillis plerumque fasciculis obsitis. Capitula saepius solitaria, brevissime pedunculata pedunculis crassiusculis dense flavescenteque subtomentoso-pilosus 1–1.8 cm. longis demum fistulosus, radiata, pansa ad anthesin 3–3.5 cm. lata et 8–10 mm. alta. Involucri bracteae dense flavescenteque subtomentoso-pilosulae exteriores circ. 11, manifeste biseriales, foliaceae, ovatae, obtusae, multinerviae, subaequales, 5–7 mm. longae et 3.3–4.8 mm. latae; interiores circ. 13, crasso-membranaceae, elliptico-oblongae, supra usque ad apicem subobtusum vel subacutum angustatae, anguste pallido-marginatae, multinerviae, quam exteriores dimidio longiores. Flores ligulati circ. 12, aurei, ligula obovati, subintegri, circ. 10-nervii, circ. 1.4–1.6 cm. longi et 6.5 mm.

lati. Paleae lineari-oblongae, acutae, circ. 7-nerviae, supra sparsim ciliolatae, ad lineam medianam pilosae, circ. 6 mm. longae. Disci florum stigmata deltoidea, hispidula, apiculata. Achaenia immatura lineari-oblonga, obcompressa, piloso-ciliata, dorso glabra, ventre pilosa, apice eciliata sed biaristata aristis sursum ciliatis, 3-4 mm. longis.

Type specimen: Collected by *August Weberbauer*, No. 6995, on grass steppes with scattered shrubs, at altitude of 3,500-3,600 meters, between Hacienda Llaguén and Succhabamba, Province of Otuzco, Department of Libertad, Peru, June 28, 1914 (Berl., 2 sheets).

Distribution: Known only from type locality.

Specimens examined: *Weberbauer 6995* (2 type sheets, Berl.).

Distinct from all other South American species of *Coreopsis* in its broadly oval-ovate, biseriate outer involucre bracts.

32. *Coreopsis notha* Blake & Sherff ex Sherff, Bot. Gaz. 80: 373. 1925.

Folia plerumque 3-4 cm. longa..... *C. notha* sensu stricto.

Folia circ. 1.5 cm. longa..... var. *β parvulifolia*.

Frutex 1 m. altus, caule striatulo subtereti glabrescente, ramis striato-angulatis sparsim hispidulis, internodiis plerumque 1-4.5 cm. longis. Folia opposita, tenuiter petiolata petiolis sparsim ciliatis 1-1.5 cm. longis ad basim in poculum plus minusve hispidulum 1.5 mm. altum connatis, petiolo adjecto plerumque 3-4 cm. longa, ternatisecta lamina circumambitu deltoidea, foliolis lateralibus breviter stipitatis vel subsessilibus 3-5-sectis terminali longiusculo stipitato pinnatim 5-secto, segmentis ultimis lanceolatis vel oblongis, acutis, membranaceis, obscure pubescentibus et ciliatis, plerumque 3-8 mm. longis et 1-2.5 mm. latis. Capitula longe tenuiterque pedunculata pedunculis monocephalicis sordide crispo-pilosulis praecipue apicem versus 7-21 cm. longis, radiata, pansa ad anthesin 3.4-3.8 cm. lata et circ. 7-8 mm. alta. Involucri bracteae exteriores 6, oblongae, apice obtusae vel rotundatae, basi plus minusve ciliatae, dorso non nisi ad basim pilosulae ventre sordido-pilosulae, 2-3 mm. longae et 1-1.6 mm. latae; interiores 8, oblongo-ellipticae, obtusae, anguste flavescenti-marginatae, apice minute ciliolatae aliter glabrae, 9-12 mm. longae et 3-4.6 mm. latae. Flores ligulati, aurantiaci, ligula oblongo-obovati, apice subintegri, 13-15-striati, 1.7-2.3 cm. longi et circ. 9 mm. lati. Paleae oblongae, apice truncato hispidulo-ciliatae, ad dorsi lineam medianam pilosae, circ. 12-nerviae. Disci florum stigmata breviter deltoidea, hispidula, apiculata. Achaenia

lineari-oblancoolata, obcompressa, brunneo-nigra, marginibus pilosociliata, apice ciliolata, ad ventris costam medianam pilosa, corpore circ. 6 mm. longa et 1.7 mm. lata, bi- (raro tri-) aristata aristis sursum piloso-ciliatis, 2.7–3.4 mm. longis.

Type specimen: Collected by *August Weberbauer*, No. 3812, at altitude of 2,400–2,700 meters, above San Pablo, Province of Cajamarca, Department of Cajamarca, Peru, April 26, 1904 (Berl., 2 sheets).

Distribution: Known only from Department of Cajamarca, Peru.

Specimens examined: *A. Raimondi* 7732 and 7914, alt. 1,920 meters, Cerro de Catache, Cascas, Province of Contumazá, Department of Cajamarca, Peru, May 21, 1875 (Berl.); *Weberbauer* 3812 (2 type sheets, Berl.).

Leaves similar to those of the Mexican *C. rhyacophila* Greenm., but smaller and somewhat less dissected. Vernacular name is given as “pul,” and the heads are said to be used for dyeing.

***Coreopsis notha* var. β parvulifolia** Sherff, Amer. Journ. Bot. 22: 707. 1935.

A specie foliis tantum circ. 1.5 cm. longis differt.

Type specimen: Collected by *A. Raimondi*, No. 6695, Contumazá, Province of Contumazá, Department of Cajamarca, Peru, 1875 (Berl.).

Distribution: Known only from type locality in northern Peru.

Specimen examined: *Raimondi* 6695 (type, Berl.).

Sharply separable from *C. notha* by the smaller leaves and perhaps smaller stature of the plant. The more or less filiform leaf petioles offer a ready distinction from the otherwise deceptively similar *C. fasciculata* var. *laevigata* of southern Peru.

33. ***Coreopsis capillacea*** HBK. Nov. Gen. et Sp. 4: 180 (230). 1820.

Fruticosa, adscendens vel erecta, caule glabro demum \pm 8 mm. crassa, forsitan 6–8 dm. alta, ramosa ramis lignosis glabris tetragonisque, ramulis glabratibus vel ad terminos hispidulis subdense foliaceis foliis quam internodiis multo longioribus. Folia opposita, petiolata petiolis usque ad 2 cm. longis, petiolo adjecto, 3–6 cm. longa, pinnatim 3–5-partita segmentis filiformibus 0.5–1 mm. latis, glabratibus vel rarius minute hispidulis subplanis integerrimis apice acerrimis lateralibus quam terminali paulo brevioribus. Capitula solitaria vel perpauca, tenuiter pedunculata pedunculis pubescentibus circ.

5–10 cm. longis, radiata, pansa ad anthesin circ. 2.5–3.8 cm. lata et 8–11 mm. alta. Involucri bracteae exteriores circ. 8, lanceolato-lineares vel oblongo-lineares, facie dorsali longitudinaliter valde 3-nervatae, apice subobtusae, marginibus et facie ventrali albido-hispidae; interiores late oblongo-lanceolatae, longiores, glabratae, acutiusculae. Flores ligulati circ. 8, aurantiaci, ligula oblongo-elliptici vel oblongo-oblancheolati, apice denticulati, ± 1.5 cm. longi. Paleae lanceolatae vel sursum abrupte ad apicem et deorsum sensim ad basim angustatae, apice saepe eroso-dentatae, dorso hispidae ventre glabrae, ± 5 mm. longae. Florum tubulosorum styli rami apice breviter acriterque conici. Achaenia atra, oblonge lineari-lanceolata, valde obcompressa, longitudinaliter multistriata, marginibus et ventre (saepe etiam ad tergi costam medianam) dense erecto-hispida pilis albidis elongatis sericeis et basi papillatis, corpore circ. 4.5–5.5 mm. longa et circ. 1.2–1.5 mm. lata, apice plus minusve setoso biaristata aristis linearibus antrorsum hispidis circ. 2 mm. longis.

Type specimen: Collected by *Alexander Humboldt* and *Aimé Bonpland*, locality uncertain but suspected by Kunth as being in the Peruvian Andes. Type should be among the Humboldt and Bonpland specimens at Paris.

Distribution: Southernmost Ecuador and perhaps adjacent Peru.

Specimens examined: *Ed. André 4387*, cold region, Catamayo, Province of Loja, Ecuador, October 31, 1876 (Kew); *William Jameson*, hills near Loja, Ecuador, commun. anno 1865 (Kew); *J. N. Rose, A. Pachano, & George Rose 23146*, vicinity of Zaragura, Ecuador, September 28, 1918 (Gray; N.Y.; U.S.); *Berthold Seemann 675*, Loxa (Loja), Ecuador, August, 1847 (Kew).

34. *Coreopsis triloba* Blake, Contr. U. S. Nat. Herb. 22: 643. 1924.

Fruticosa, erecta, caule ramisque gracilibus dense foliatis terminos versus primo piloso-tomentosis mox glabratiss, internodiis plerumque 2–8 mm. longis interdum longioribus (quidem 2 cm.). Folia opposita, petiolata petiolis 1–2 cm. longis basi in poculum 0.5–1 mm. altum connatis, petiolo adjecto 2–4 cm. longa, glabra, raro integra lineari-filiformiaque plerumque tripartita segmentis coriaceis lineari-filiformibus apice subulatis integris vel mediano interdum 3-partito, ultimis 0.3–0.8 mm. latis. Capitula pauca (plerumque 1–3 ad unicum ramulum), tenuiter pedunculata pedunculis primo piloso-tomentosis demum glabratiss, 1–6 cm. longis, radiata, pansa ad

anthesin circ. 1.5 cm. lata et 6–8 mm. alta. Involucri bracteae circ. 8, lanceolatae vel lanceolato-ovatae, obtusiusculae, crasso-herbaceae, adpressae vel parce laxae, longitudinaliter 3-vittatae, glabrae, circ. 2.5–3 mm. longae et 0.8–1.2 mm. latae; interiores oblongo-ellipticae, obtusae, glabrae, circ. 5–6 mm. longae. Flores ligulati forsitan 8, flavi, ligula elliptico-oblongi, apice denticulati, ± 6 mm. longi. Paleae immaturae acutiusculae, apice spinuloso-ciliatae. Achaenia (valde immatura) obcompressa, ciliolata, biaristata aristis paleolis similibus antrorsum hispido-ciliatis 0.8 mm. longis.

Type specimen: Collected by *William Jameson* in Ecuador (U.S., 2 sheets).

Distribution: Ecuador and Peru.

Specimens examined: *Const. De Jelski* 705, Cutervo, Peru, May, 1879 (Berl., 2 sheets); *Jameson*, Ecuador (2 type sheets, U.S.); *E. P. Killip & A. C. Smith* 22171, open rocky hillside, alt. 3150 meters, Mantaro Canyon, south of Huancayo, Department of Junín, April 29, 1929 (Field; forma foliis plus minusve atypicis); *A. Raimondi* 3022, Cutervo, Province of Cutervo, Department of Cajamarca, Peru, May, 1879 (Berl.).

35. *Coreopsis spectabilis* A. Gray, Proc. Amer. Acad. 5:125. 1861.

Suffrutex saltem 3–4.5 dm. altus, caulibus glaberrimis, teretibus, striatis, internodiis 2–6 cm. longis et circ. 1.5–2 mm. crassis. Folia opposita, tenuiter petiolata petiolis 0.5–2 cm. longis basaliter in poculum hyalinum circ. 1–1.3 mm. altum connatis, petiolo adjecto 3–6 cm. longa, 2–3-pinnatisecta, segmentis ultimis planis, glabris, acriter indurato-apiculatis, plerumque 0.5–0.8 mm. latis. Capitula perspicue pedunculata pedunculis glaberrimis (inferne 1-bracteatis vel saepius foliatis 2–3 jugis foliorum) 2.2–2.7 dm. longis, radiata, pansa ad anthesin ± 4 cm. lata et 6–8 mm. alta. Involucri bracteae glaberrimae, exteriores 6–8, late lineari-oblongae, apice obtusae, 4–5.5 mm. longae et 0.9–1.5 mm. latae; interiores anguste ovatae, 1–1.2 cm. longae. Flores ligulati (forsan 8), flavi, ligula obovati, apice obscure denticulati, circ. 1.5–1.8 cm. longi et ± 1 cm. lati. Paleae oblanceolatae, apicaliter obtusae, dorsaliter (ad margines glabrae aliter) sursum sericeo-pilosae, ventraliter glabrae, 6.5–8 mm. longae, unaquaque cum achaenio decidente. Achaenia valde obcompressa, nigra, oblanceolata, dorsaliter glaberrima, ventraliter (secundum costam medianam) ac marginaliter pilis sericeis albidisque perspicue surso-pilosa, ad latera subtilia, corpore 5.5–6.5 mm. longa et 2–2.3 mm. lata, apice biaristata aristis linearibus, stramineis, sursum sericeo-hispidis, parce patentibus, 2.5–3 mm. longis.

Type specimen: Collected by *McLean*, in the Andes Mountains of Peru (Kew).

Distribution: Peru.

Specimen examined: *McLean*, Andes Mountains, Peru (type, Kew).

36. *Coreopsis suaveolens* Sherff, Bot. Gaz. 89: 369. 1930.

Frutex ramosus, verisimiliter 5–8 dm. altus, ramis subteretibus plerumque glabris sed hac illac glutinosi odore *Covilleae divaricatae* (Cav.) Vail suaveolentibus. Folia opposita fasciculata, primaria 1.2–1.6 cm. longa, pinnatim 3–5-secta, plus minusve glutinosa, segmentis petiolis similibus vel rursus sectis, ultimis linearibus, glanduloso-hispidis, carnosus, apicaliter mucronatus, tantum 0.3–0.6 mm. latis. Capitula ramosa superne nudos (pedunculos tenues) terminantia, solitaria, radiata, pansa ad anthesin ± 2.3 cm. lata et 7–9 mm. alta. Involucri hispidi bractee exteriores circ. 8, oblongae vel late lanceolatae, obtusae, 3–5 (–7) mm. longae, quam interiores oblongo-lanceolatae circ. 8 mm. longae saepius dimidio breviores. Flores ligulati circ. 6, lutei, ligula oblongo-elliptici, apice integri vel (etiam profunde) bifidi, 7–11 mm. longi. Disci florum stigmata breviter, abrupte incrassata truncatae. Achaenia ignota. Habitu *C. fasciculatae* Wedd. valde similis.

Type specimen: Collected by *Erich Werdermann*, No. 1114, at altitude of about 3,800 meters, Cordillera de Lallinca, Province of Tarapacá, Department of Tarapacá, Chile, March, 1926 (Gray).

Distribution: Known only from type locality in Chile.

Specimens examined: *Werdermann 1114* (type, Gray; cotypes, Field; Stockh.; Calif.). The label on the Field Museum sheet says "Cord. Co. Columfusca, Apacheta, Prov. Tarapacá. . ."

37. *Coreopsis Pickeringii* A. Gray, Proc. Amer. Acad. 5: 124. 1861. *Coreopsis Boliviana* Blake, Contr. U. S. Nat. Herb. 22: 644. 1924.

Frutex fere glaberrimus vel praecipue caule ramisque plus minusve hispidus, 6–10 dm. altus, internodiis plerumque 1–4 cm. longis. Folia opposita petiolata petiolis tenuibus usque ad 2 cm. longis, basi in poculum membranaceum saepe 4 mm. altum connatis, petiolo adjecto 2–3.5 cm. longa, ternatisecta, foliolis 3–5-sectis, segmentis glabris, crassiusculis, linearibus, eciliatis, acriter apiculatis, usque ad 1 cm. longis et 0.6–1.5 mm. latis, quam rhachi tenui vix latoribus. Capitula longe tenuiterque pedunculata pedunculis usque ad 1.5

(rarius 2.3) dm. longis, radiata, pansa ad anthesin 3.5–4 (–5) cm. lata et 0.9–1.1 cm. alta. Involucri hispidi bractee exteriores circ. 8, late lineari-oblongae, apice obtusae, dorso glabrae hispidaeve, marginibus longe ciliatae, circ. 5 mm. longae et 1–2 mm. latae; interiores oblongo-lanceolatae, flavo-marginatae, multistriatae, circ. 1 cm. longae et 3–3.5 mm. latae. Flores ligulati 8 vel 9, flavi, ligula anguste obovati, apice rotundati et integri vel obscure denticulati, 1.5–2.4 cm. longae et 4–9 mm. lati. Paleae oblongae, apice obtusissimae vel truncatae et saepe eroso-dentatae, exteriores dorso villosae, circ. 7–8 mm. longae. Disci florum stigmata ovoidea, breviter apiculata. Achaenia oblongo-oblanolata, plana, atra, dorso sub palea plus minusve glabra ventre et praesertim marginibus sursum villosissima, corpore 5.5–6.5 mm. longa et circ. 1.1–1.3 mm. lata, apice biaristata aristis sursum hispidis circ. 2 mm. longis.

Type specimen: Collected by the *United States Exploring Expedition* under *Captain Wilkes*, high in the Andes above Obrajillo, Department of Lima, Peru (U.S.).

Distribution: Peru and Bolivia.

Specimens examined: *Otto Buchtien* 97, alt. 3,750 meters, dry slopes, La Paz, Bolivia, June 18, 1906 (Field); *J. Francis Macbride* 2932, alt. about 2,400 meters, on southeastern rock slide, Matucana, Peru, March 14–18, 1923 (Field; U.S.); *idem* & *Featherstone* 210, alt. about 2,400 meters, rock outcrop on northern slope, Matucana, Peru, April 12–May 3, 1922 (Field); *Francis W. Pennell* 14342, forming large clumps on open, rocky slope, alt. 2,700–2,900 meters, Canta, Department of Lima, Peru, June 11–19, 1925 (Field); *H. H. Rusby* 1685, alt. 3,000 meters, near La Paz, Bolivia, October, 1885 (type collection of *C. boliviana* Blake; Field; Gray; N.Y.); *U. S. Explor. Exped.* under *Capt. Wilkes*, above Obrajillo, Peru (type U.S.).

38. *Coreopsis imbricata* Sherff, Bot. Gaz. 89: 370. 1930.

Frutex 6–12 dm. altus, caule ramisque glabris, striatis, ramulorum internodiis numerosis saepius tantum 2–10 mm. longis. Folia opposita, petiolata petiolis tenuibus basi vix connatis circ. 1 cm. longis, petiolo adjecto circ. 2–2.5 cm. longa, ternatim bipinnatisecta, segmentis linearibus, crassiusculis, glabris, eciliatis, acriter apiculatis, 2–8 mm. longis et circ. 0.3–0.6 mm. latis. Capitula ramulos terminantia (vix manifeste pedunculata), radiata, pansa ad anthesin 3.5–4.5 cm. lata et 1–1.2 cm. alta. Involucri villosi bractee exteriores circ. 16, biserialae, late lineari-oblongae, apice obtusae, 6–7 mm. longae et 1.1–1.5 mm. latae; interiores ovatae, flavo-marginatae,

obtusae, 1–1.1 cm. longae. Flores ligulati circ. 8, flavi, ligula oblongo-elliptici, apice integri vel subintegri, 1.8–2.4 cm. longi et 6–7 mm. lati. Paleae lineares, circ. 5-striatae, apice obtusae et denticulatae, ± 8 mm. longae et ± 0.5 mm. latae. Disci florum stigmata caudato-apiculata. Achaenia lineari-oblongata, plana, atra, dorso glabra, ventre ac marginibus ac apice sursum villosa, corpore ± 5 mm. longa et ± 1.4 mm. lata, biaristata aristis sursum hispidis ± 2.7 mm. longis.

Type specimen: Collected by *R. Pearce*, altitude 3,600 meters, Cordillera Huanta (midway between Lima and Cuzco), Peru, February, 1867 (Kew).

Distribution: Known only from type locality.

Specimens examined: *Pearce*, Cordillera Huanta (type, Kew).

Close to *Coreopsis Pickeringii* Gray, from which it differs in its numerous, much shorter internodes, its lack of elongate peduncles, the caudate-tipped stigmas of its disc florets, its double outer involucre the bracts of which are larger, etc.

39. *Coreopsis Townsendii* Blake, Contr. U. S. Nat. Herb. 22: 643. 1924.

Fruticosa, forsitan 4–7 dm. alta, caule gracili, tetragono, subviridi, glabro, ramis erectis. Folia opposita, petiolata petiolis basi connatis 1–2.5 cm. longis, petiolo adjecto 2–5 cm. longa, pinnatim 3–5-partita segmentis integris linearibus acutis coriaceis unicostatis glabris vel inferne ad costam sparsim obscureque pubescentibus 7–23 mm. longis et 1–1.8 mm. latis. Capitula solitaria vel perpauca, tenuiter pedunculata pedunculis laxe (ad capitulum dense) pilosis circ. 1–5.5 cm. longis, radiata, pansa ad anthesin 2.5–3.4 cm. lata et ± 7 mm. alta. Involucri bracteae exteriores circ. 6, lineari-oblongae, obtusae vel rotundatae, 3-vittatae, inferne ciliatae aliter glabrae, circ. 4–4.5 mm. longae et circ. 1–1.2 mm. latae; interiores elliptico-oblongae, apice obtuso eroso-ciliatae, ± 8 mm. longae et ± 2.5 mm. latae. Flores ligulati 8, flavi, ligula anguste oblongo-obovati, ± 14 mm. longi et ± 7 mm. lati. Paleae oblongae, apice eroso-ciliatae, dorso infra mediane erecto-pilosae, circ. 3.3–4 mm. longae. Flores tubulosi flavi, tubi apice glandulo-puberuli, gutture campanulato-infundibuliformi superne sparsim pilis multiloculatis piloso; stylorum ramis termino deltoideis et obtusiusculis. Achaenia submatura oblonga, valde obcompressa, atra, ventris costa mediana plus minusve erecto-pilosa, tergo glabra, dense longeque erecto-ciliata, corpore circ. 3.5 mm. longa, apice biaristata aristis (immaturis) lanceolatis, trigonis, dense antrorsumque hispidis, ± 1.3 mm. longis.

Type specimen: Collected by *Charles Henry Tyler Townsend*, No. A192, at altitude of 1,950–2,250 meters, Huascaray, Peru, September 10, 1911 (Field).

Distribution: Bolivia and Peru.

Specimens examined: *K. Fiebrig* 3476, alt. 3,200 meters, Jaipa, Bolivia, February 20, 1904 (Berl., 2 sheets); *Townsend* A192 (type, Field).

40. *Coreopsis fasciculata* Wedd. Chlor. And. 1: 71. 1855.
Coreopsis Matthewsii A. Gray, Proc. Amer. Acad. 5: 124. 1861.

Involucra plus minusve tomentosa. . . . *C. fasciculata* sensu stricto.
Involucra glaberrima vel basi vix sparso-hispida. . . var. β *laevigata*.

Frutex circ. 7.5 cm. altus, caule ramisque glaberrimis vel interdum pubescentibus, angulato-striatis, parce subtetragonis, internodiis saepius 1–3 cm. (ramulorum saepius 2–7 mm.) longis. Folia opposita (illa ramulorum sterilius subfasciculata), petiolata petiolis tenuibus 6–10 mm. longis, inferne saepe ciliatis raro resinosis basi in poculum 1–3 mm. altum connatis, petiolo adjecto 1.3–2 cm. longa, tripartita, foliolis 2–3-fidis, segmentis linearibus, vix membranaceis, plerumque glabris, apice apiculatis, 1–7 mm. longis et 0.4–1.2 mm. latis. Capitula ramulos (in pedunculos superne tomentosos 1–12 cm. longos productos) terminantia, radiata, pansa ad anthesin 2.3–2.8 cm. lata et 8–10 mm. alta. Involucra plus minusve tomentosi bractee exteriores 6–8, spathulato-lanceolatae vel lineari-lanceolatae, apice obtuso saepe rotundatae, 1.3–5 mm. longae et 0.5–2 mm. latae; interiores lanceolatae, saepius flavo-marginatae, circ. 1 cm. longae. Flores ligulati circ. 7 vel 8, flavi, ligula elliptico-oblongi vel anguste obovati, apice subintegri, 1–1.5 cm. longi. Paleae lineari-oblongatae, apice laciniato-denticulatae, dorso villosae, circ. 6 mm. longae. Disci florum stigmata parce caudato-apiculata. Achaenia lineari-oblongata, plana, dorso sub palea glabra, ventre marginibusque sursum villosa, corpore circ. 5 mm. longa et circ. 1 mm. lata, biaristata aristis sursum villosis circ. 2 mm. longis.

Type specimen: Collected by *Claude Gay* in Peru (Par.).

Distribution: Ecuador (where apparently rare) to Peru and Bolivia.

Specimens examined: *J. Ball*, alt. 3,600–3,900 meters, rocky places near Chicla, Peru, April 21–23, 1882 (Kew); *A. Bonpland*, equatorial America (Par., sub nom. *Coreopsis Matthewsii* A. Gray); *Otto Buch-tien* 595, alt. 3,300 meters, lower half of Obrajés, La Paz, Bolivia, May 13, 1919 (Field, 2 sheets; Gray); *A. E. Douglas*, Arequipa, Peru,

1892 (Gray); *Mr. & Mrs. F. E. Hinkley 51*, ravines at about 2,700 meters, southern slopes of Chachani Mountain, north of Arequipa, Peru, March, 1920 (Gray); *Hrdlicka*, alt. 2,400–3,000 meters, western Cordillera, vicinity of San Damián, Peru, January–February, 1913 (U.S.); *E. P. Killip & A. C. Smith 21536*, straggling shrub, 2–4 ft. high, alt. 3,000–3,500 meters, open hillside, Río Blanco, Department of Lima, Peru, April 15–17, 1929 (Field); *idem 23304*, up to 3 ft. high, alt. 4,200 meters, open hillside between Huanta and Hacienda Pargora, Department of Ayacucho, Peru, May 2–19, 1929 (Field); *Macbride & Featherstone 436*, alt. about 2,400 meters, rocky, grassy summit slope, Matucana, Peru, April 12–May 3, 1922 (Field); *idem 690*, alt. about 3,600 meters, rocky places, Río Blanco, Peru, May 8–19, 1922 (Field); *idem 1237*, alt. about 3,000 meters, rocky southwestern canyon slope, Yanahuanca, Peru, June 16–22, 1922 (Field); *Alexander Mathews 571*, Purrochuca and Obrajillo, Peru, April to July (Kew; the basis of *C. Matthewsii* A. Gray); *F. W. Pennell 13244*, alt. 2,800–2,900 meters, rocky ravine above Arequipa, Peru, April 7–16, 1925 (N.Y.); *idem 14396*, alt. 2,800–3,200 meters, open, rocky slopes, along Río Chillón, above Obrajillo, Department of Lima, Peru, June 13–23, 1925 (N.Y.); *idem 14710*, alt. 3,300–3,500 meters, Huaros, Department of Lima, Peru, June 23, 1925 (N.Y.); *C. S. Sargent 27*, above Chicla, Peru, December 26, 1905 (U.S.); *C. Troll 3157*, Paychama, Chile, March 9, 1927 (Berl.); *Warszewicz 37*, Ecuador (Berl.); *August Weberbauer 203*, rocky places above 3,000 meters alt., Huillacachi, southwest from Matucana, Peru, December 28, 1901 (Berl.); *idem 2394* pro parte, alt. 3,300–3,500 meters, Tarma, Department of Junín, Peru, February 10, 1903 (Berl.); *idem 5764*, alt. 3,100 meters, between the Río de Lomas and the Río Yauca (15° 10'–15° 20' S. Lat.), May 15, 1911 (Berl.; Field); *idem 5782*, alt. 3,300 meters, south from Chavina, Province of Tarinacochas, Department of Ayacucho, Peru, May 16, 1911 (Berl.; Field).

Coreopsis fasciculata var. β *laevigata* Sherff, Amer. Journ. Bot. 22: 707. 1935.

Foliorum segmenta saepius lineari-spathulata vel anguste oblongo-oblancoolata, involucris glaberrimis vel basi vix sparso-hispidis.

Type specimen: Collected by *Fortunato L. Herrera*, No. 111, at altitude of 3,400–3,600 meters, Cuzco, Peru (Berl.).

Distribution: Southern Peru.

Specimens examined: *Herrera 111* (type, Berl.); *idem 391*, alt. 3,200–3,600 meters, environs of Cuzco, November, 1924 (Berl.;

planta tinctoria, fide lectoris); *idem* 1186, alt. 3,500–3,600 meters, heights of Cuzco, November, 1926 (Berl.); *idem* 1481 pro parte, alt. 3,350 meters, environs of Cuzco, March, 1927 (Gray; cum *Bidente andicola* var. *decomposita* O. Ktze. commixta).

41. *Coreopsis lanceolata* L. Sp. Pl. 908. 1753; Sims in Curtis, Bot. Mag. pl. 2451. 1823. *Bidens Caroliniana*, *florum radiis latissimis, insigniter dentatis*, etc. Martyn, Hist. Pl. Rar. 26 and plate. 1728. *Bidens succisae folio, radio amplo laciniato* Dillen. Hort. Eltham. Pl. Rar. Icon. et Nom. 55, pl. 48, f. 56. 1732. *Coreopsoides lanceolata* (L.) Moench, Meth. 594. 1794. *Coreopsis lanceolata* var. *glabella* Michx. Fl. Bor. Amer. 2: 137. 1803. *Leachia lanceolata* (L.) Cass. Dict. Sci. Nat. 25: 389. 1822. *Chrysomelea lanceolata* (L.) Tausch, Hort. Canal. f. 1 (ex DC. Prodr. 5: 570. 1836). *Coreopsis lanceolata* var. *Succisaefolia* DC. Prodr. 5: 570. 1836. *Coreopsis lanceolata* var. *angustifolia* Torr. & Gray, Fl. N. Amer. 2: 344. 1843. *Bidens caroliniana* Hemsl. in Curtis, Bot. Mag. 27, index. 1906.

Glabra vel foliorum basibus ciliolata.... *C. lanceolata* sensu stricto. Pubescens vel hirsuta.... var. *β villosa*.

Herba perennis, 2–6 dm. alta, caulibus erectis vel adscendentibus, teretibus vel subangulatis, glabris, ramosis, basim versus foliosis, superne subnudis ac maxime elongatis (in pedunculos desinentibus). Folia opposita, glabra vel basi ciliata, plerumque 5–15 cm. longa, superiora sessilia inferiora saepius longe tenuiterque petiolata petiolis laminas interdum superantibus, nunc spathulata nunc linearia vel lineari-lanceolata nunc lineari-oblancheolata, plerumque simplicia raro 1–2 lobis parvis lateralibus divisa. Capitula radiata, pansa ad anthesin 3–6 cm. lata et 1–1.4 cm. alta. Involucri bracteae exteriores 8–10, lanceolatae vel oblongo-ovatae, glabratae vel apice pubescentes, 4–8 mm. longae; interiores lanceolato-ovatae vel oblongo-ovatae, 8–12 cm. longae. Flores ligulati circ. 8, flavi, ligula obovati vel cuneati, apice 3-lobati lobo mediano plerumque 2–3-dentato, 1.3–3 cm. longi. Paleae inferne oblongo-lineares superne filiformes, 4–6 mm. longae. Florum tubulosorum styli rami caudato-appendiculati. Achaenia obcompressa, alata, circumambitu (alis paululum incurvatis inclusis) orbiculata, 2.3–3 mm. longa, corpore atra, ventre gibbis callosis saepe perspicue munita ac saepe tuberculata vel setis nunc superne sensim dilatatis nunc apice capitatis setosa, apice dentibus parvis fimbriolatis bidentata.

Type specimen: No specimen cited. The Linnean concept rested upon such clear and unmistakable illustrations as those given by Martyn (loc. cit.) and by Dillenius (loc. cit.).

Distribution: Michigan and Lake Superior southward to Florida, Alabama, Louisiana, southeastern Texas, and northern New Mexico; widely cultivated for ornament and occasionally escaping; apparently becoming established in eastern China.

Specimens examined: *Anon.*, Florida (Gray; var. *angustifolia* Torr. & Gray, an official specimen for the treatments in Torr. & Gray, loc. cit. and Gray, Syn. Fl. loc. cit.); *H. C. Benke* 3183, Miller, Indiana, May 22, 1922 (Field); *J. M. Bigelow*, Fort Smith, Arkansas to the Rio Grande, along 35th parallel of latitude, 1853–1854 (N.Y.); *Biltmore Herb.* 2067a, dry soil near Apalachicola, Florida, May 2, 1883 (Gray); *Dr. Boykin*, Georgia (Gray; N.Y.); *M. A. Brannon*, near Crown Point, Indiana, 1889 (Field); *Brendel*, Illinois (Berl., 2 sheets); *Mason Bross*, Hyde Park, Chicago, Illinois, June 3, 1878 (Field); *S. H. & D. R. Camp*, Bay View, Michigan, July 14, 1896 (Field); *H. C. Cheo & W. F. Wilson* 11 p.p., near house, Mo Kan Shan, Province of Chekiang, China, June 19, 1926 (Calif., 2 sheets); *Hubert Lyman Clark*, Falmouth Road, Woods Hole, Massachusetts, August 16, 1899 (Gray); *A. H. Curtiss*, Pensacola, Florida, 1885 (N.Y.); *idem* 1481, dry pine woods, near Aspalaga, Florida, April (var. *villosae* adpropinquans; Berl., 2 sheets; Field, 2 sheets; Gray); *Arthur W. De Selm* 140, west of Kankakee, Illinois, June 1, 1913 (Field); *Royal A. Dixon* 528, vicinity of Huntsville, Texas, May 6–12, 1910 (Field; var. *angustifolia* Torr. & Gray); *idem & Cornelia Gage* 713, Morgan Park Ridge, Illinois, May 27, 1907 (Field); *C. W. Duesner*, Pine, Indiana, 1908 (Field); *F. S. Earle & C. F. Baker* 243, Auburn, Alabama, May 8, 1897 (Field); *H. Eggert*, rocky hills, Jefferson County, Missouri, May 20, 1887 (Gray); *idem*, eodem loco, May 25, 1896 (Gray); *J. H. Ehlers* 518, dry, sandy soil, near Cecil Bay, Emmet County, Michigan, July 14, 1917 (Gray); *George Engelmann*, prairies, vicinity of East St. Louis, Illinois, May, 1845 (Berl.); *Frank C. Gates* 508, Ravenswood, Chicago, Illinois, June 23, 1905 (Field); *idem* 2478, sandy soil, Waukegan, Illinois, June 8, 1908 (Field); *idem & M. T. Gates* 10547, along sandy road, Cecil Bay, Emmet County, Michigan, July 14, 1917 (Field); *Jesse M. Greenman* 2017, sandy soil near Lake Michigan, Beach, Illinois, June 16, 1907 (Gray); *idem* 2592, Dune Park, Indiana, June, 1910 (Gray); *Dr. Hale*, Louisiana, 1842 (Gray); *Elihu Hall*, sandy barrens, Athens, Illinois, 1861 (Gray, cum var. *villosa* commixta, sed alibi tantum species ipsa); *Roland M. Harper* 22, Screeton, Arkansas, May 1, 1923 (Gray); *herb. Hexamer & Maier*, rich woods, June 16, 1855 (Gray); *E. J. Hill*, dry grounds, Morgan Park, Chicago,

Illinois, June 17, 1876 (Field); *Albert S. Hitchcock*, Madison County, Florida, June–July, 1898 (Field); *Hort. Berol.*, September, 1832 (Berl.); *Mary E. Hutchinson*, Randolph, Wisconsin (Field); *L. N. Johnson*, sandy ridges in woods, Chicago, Illinois, June 19, 1891 (Gray); *A. B. Langlois*, western Louisiana, April, 1880 (Field); *O. E. Lansing, Jr.* 848, along railroad, Clarke, Indiana, May 31, 1900 (Field); *idem* 935, eodem loco, June 20, 1900 (Field); *idem* 2715, swale near railroad, Indiana Harbor, Indiana, June 17, 1908 (Field); *idem* 2782, eodem loco et tempore (Gray, var. *villosae* adpropinquans); *I. A. Lapham*, Milwaukee, Wisconsin (Gray); *Le Conte*, North America (Berl.); *George W. Letterman*, top of sandhill near Franklin County Road Bridge, Missouri, July, 1883 (Mo.); *C. O. Levine* 778, Honam Island, Kwang-Tung Province, China, May 12, 1917 (Gray; Mo.); *L. H. Lighthipe*, Monticello, Florida, April 5, 1891 (Field); *F. Lindheimer*, wet woods west of Houston, Texas, early May, 1840 (Berl.); *Ray N. Lloyd*, rich or damp soil, Ravenswood, Chicago, Illinois, June 3, 1887 (Field); *Loring*, Lake Superior (Gray); *W. H. Manning*, Mackinac Island, Michigan, July 11, 1915 (Gray); *F. E. McDonald*, dry, gravelly slopes, Peoria, Illinois, June, 1899 (Field); *idem*, high, dry hills overlooking Horse Shoe Bottom, Peoria, June, 1904 (Gray); *idem*, high, gravelly hills, Peoria, June, 1915 (Field) and June, 1916 (Field); *S. B. Mead*, Mason County, Illinois, June 18, 1845 (Field; var. *angustifolia* Torr. & Gray); *W. S. Moffatt* 105, sandy thickets, Chicago, Illinois, June, 1895 (Berl.; Gray); *H. F. Munroe*, Hyde Park, Chicago, Illinois, May (Field) and June, 1879 (Field); *E. J. Palmer* 17, cherty barrens, Newton County, Missouri, July 1, 1906 (Gray); *idem* 2386, cherty barrens, Reding's Mill, Missouri, July 1, 1909 (Gray); *idem* 2386A, eodem loco et tempore (Gray); *A. S. Pease* 17993, damp, sandy beach, Bailey's Harbor, Door County, Wisconsin, June 18, 1921 (Gray); *S. F. Poole*, Sharon, Massachusetts, July, 1905 (Gray); *Thomas C. Porter*, banks of Savannah River, near Augusta, Florida, April, 1847 (Gray); *P. H. Rolfs* 309, Tallahassee, Florida, April 20, 1895 (Field); *B. F. Saurman*, rich, grassy plains, Apalachicola, Florida (Field; var. *angustifolia* Torr. & Gray); *F. Scammon*, Chicago, Illinois, June, 1859 (Field) and June 3, 1859 (Field); *A. K. Schindler* 345a, alt. 1,100 meters, Lu-shan, Kuling Mountains, Province of Kiangsi, China, August–September, 1908 (Berl.); *J. H. Schuette*, Door, Wisconsin, July 30, 1887 (Field, 2 sheets); *idem*, shore of Lake Michigan north of Sturgeon Bay Canal, Wisconsin, July 14, 1890 (Field); *Earl E. Sherff* 5006, cult. in Harvard Univ. Bot. Gard., August 12, 1929 (Berl.; Brit.; Field); *H. C. Skeels* 304, Joliet, Illinois, June

21, 1904 (Field); *Paul C. Standley 4410*, alt. about 2,460 meters, hillside near Cowles, Pecos River National Forest, New Mexico, July 19, 1908 (Gray); *A. N. Steward*, open hillside, Lu-shan, Kuling, Province of Kiangsi, China, July 27, 1922 (Calif.); *idem 1518*, in open, Kikungshan, Province of Honan, China, July 24, 1925 (Calif.); *idem 1583*, damp meadow, eodem loco, July 27, 1925 (Calif.); *W. F. Thurrow*, Hockley, Texas, 1890 (Field); *S. M. Tracy 9454*, St. Andrews, Florida, April 29, 1908 (Gray); *idem & Lloyd 508*, Virginia, August 15, 1910 (Field; Gray); *L. M. Umbach*, dry sands, Miller, Indiana, June 5, 1897 (Field); *idem*, sands, Clarke, Indiana, June 4, 1898 (Field); *H. E. Wheeler 82*, near Hazen, Grand Prairie, Arkansas, May 22, 1924 (Field); *H. N. Whitford 64* and *203*, waste fields, Cold Spring Harbor, New York, August, 1903 (Field); *Emile F. Williams*, self-sown and thriving, Concord, Massachusetts, June 20, 1908 (Gray); *Wilbur H. Wright 50*, Miller, Indiana, July 2, 1908 (Field).

Coreopsis lanceolata* var. β *villosa Michx. Fl. Bor. Amer. 2: 137. 1803. *C. crassifolia* Dryand. in Ait. Hort. Kew. ed. 1. 3: 252. 1789; non Sessé & Moc. Fl. Mex. ed. 2. 194. 1894. *C. oblongifolia* Nutt. Journ. Acad. Phila. 7: 76. 1834. *C. lanceolata* var. *crassifolia* Ait. ex Heynhold, Nomencl. 219. 1840.

E specie planta omnino vel fere usque ad summam pubescente differt.

Type specimen: Collected by *André Michaux* in Carolina (Par.).

Distribution: South Carolina, Illinois, Missouri, and western Arkansas, southwardly to Florida, Alabama, and Louisiana; elsewhere probably introduced.

Specimens examined: *Anon.*, Tampa Bay, Florida (Gray); *H. H. Babcock*, Chicago, Illinois, June 17, 1874 (Field); *J. M. Bigelow*, Fort Smith, Arkansas, June 23, 1853 (N.Y.); *Biltmore Herb. 5693b*, dry soil, Spartanburg, South Carolina, May 12, 1897 (Gray); *B. F. Bush 84*, common in barrens, Eagle Rock, Missouri (Gray); *William M. Canby 55*, Columbia, South Carolina, May 9, 1899 (Gray); *A. W. Chapman*, middle Florida (Field); *A. H. Curtiss 6390*, old field near River Junction, Florida, May 2, 1898 (Gray); *H. Eggert*, stony hills, Jefferson County, Missouri, June 10, 1891 (Gray; Mo.); *idem*, Hematite, Missouri, May 25, 1896 (Calif.; Field; U.S.); *herb. George Engelmann*, Aiken, South Carolina, April, 1882 (Mo.); *Frank C. Gates 942*, Chicago, Illinois, June 24, 1905 (Field); *idem 2817*, Beach, Illinois, July 1, 1908 (Field); *C. A. Geyer*, Beardstown, Illinois (Mo., 2 sheets); *Grassly*, Hyde Park, Chicago, Illinois, June 10,

1877 (Field); *Dr. Hale*, Louisiana (Field; Gray); *E. J. Hill 1108*, top of limestone ledge, Lockport, Illinois, June 14, 1899 (Field); *idem 2746*, eodem loco et tempore (Gray); *G. G. Kennedy*, dry pine woods, Ormond, Florida, March 29, 1897 (Gray); *O. E. Lansing, Jr. 243*, waste ground, Hyde Park, Chicago, Illinois, June 14, 1898 (Field); *G. W. Letterman*, Allenton, Missouri, August, 1883 (Gray); *idem*, Morely, Missouri, July, 1884 (Mo., 2 sheets); *F. E. McDonald*, high, dry hills, Peoria, Illinois, May, 1915 (Field); *Mrs. J. M. Milligan*, Jefferson County, Missouri (Field); *E. J. Palmer 27056*, rocky, open ground, along stream near Berryville, Arkansas, May 7, 1925 (Gray); *H. W. Ravenel*, Santee Canal, South Carolina (Gray); *F. Scammon*, Chicago, Illinois (Field); *Earl E. Sherff 5013*, cult. in Harvard Univ. Bot. Gard., August 12, 1929 (Brit.; Calif.; Field); *idem 5014*, cult., eodem loco et tempore (Field; Kew); *idem 5016*, cult., eodem loco et tempore (Calif.; Field; Kew; N.Y.; U.V.); *Mary F. Spencer 1114*, alt. 300 meters, ditch near San Bernardino, California, May 9, 1919 (Gray); *E. F. Williams*, well established, Wickford, Rhode Island, June 17, 1908 (Gray); *R. E. Woodson, Jr. & E. S. Anderson 1545*, Birmingham, Alabama, April 20, 1927 (Mo.).

42. *Coreopsis corninsularis* Sherff, Bot. Gaz. 94: 597. 1933.

Herba perennis, erecta, gracilior, caulibus tenuibus angulatis glabris 2 vel 3 ex unico basi circ. 3–4 dm. altis. Folia opposita, plus minusve petiolata petiolis tenuibus usque ad 3 cm. longis basi sparsim hispido-ciliatis, petiolo adjecto plerumque 3–8 cm. longa et 1–6 mm. lata, saepius integra anguste vel late spathulato-linearia crassiuscula faciebus glabra marginibus ciliata apice subacuta vel subobtusata, interdum 3–5-partita foliolis lateralibus multo minoribus et tantum 1–2 mm. latis. Capitula solitaria longe pedunculata pedunculis tenuibus glabris 1–1.8 dm. longis, radiata, pansa ad anthesin 3–5 cm. lata et 10–12 mm. alta. Involucri glabri bracteae exteriores 8–10, lanceolatae vel oblongo-lineares, 3–5 mm. longae; interiores ovato-oblongae, demum circ. 1 cm. longae. Flores ligulati circ. 8, flavi, ligula oblongo-oblancheolata, apice saepius 3-lobata lobo mediano multo majore apice rursus in 2 dentes inciso, 1.5–2.5 cm. longi. Paleae tenuiter lineares, superne filiformes, 3–4 mm. longae. Flores tubulosi flavi, styli ramis terminaliter caudato-appendiculatis. Achaenia valde obcompressa, dorso convexa, nigra, corpore ipso oblongo, 2.5–3.2 mm. longa et (alis exclusis) 1.2–1.5 mm. lata, faciebus glabra vel glabrata, marginibus alata alis expansis membranaceis quam corpore saltem 0.5–0.75 angustioribus, apice papposa 2 fimbriatis squamellis circ. 0.1–0.2 mm. longis.

Type specimen: Collected by *Samuel Mills Tracy*, No. 8542, on Horn Island, Mississippi, May 25, 1903 (Mo.).

Distribution: Known only from type locality on Horn Island, Mississippi.

Specimens examined: *Tracy 8542* (type, Mo.; cotype, Field).

43. *Coreopsis debilis* Sherff, Bot. Gaz. 89: 366. 1930.

Herba perennis, caulibus saepius 2–6, e radice lignescenti erectis, tenuissimis, angulatis, glabris, 3–6 dm. altis. Folia opposita, membranacea, petiolata petiolis tenuibus usque ad 2 cm. longis, lamina nunc indivisa linearia vel parce lineari-oblancheolata margine integra ciliataque apice vix acuta basim versus sensim angustata faciebus saepe aegre hispida petiolo adjecto 2–5 cm. longa et 1–5 mm. lata; nunc majora, petiolo saepe 3.5 cm. longo adjecto 7–9 cm. longa, aegre pinnata (raro etiam subbipinnata) segmentis lateralibus plerumque 1–2 jugis, quam terminali minoribus, linearibus vel subfiliformibus. Capitula pauca vel numerosa, tenuiter pedunculata pedunculis 1–2 (–3) cm. longis, radiata, pansa ad anthesin circ. 2–2.5 cm. lata et circ. 7–9 mm. alta. Involucri saepius glabrati bractee exteriores circ. 8, lineares lanceolatae, apice acutae vel obtusae, margine ciliatae, basim versus saepe scariosae, 3–4 mm. longae; interiores lanceolatae vel ovato-lanceolatae, 7–8 mm. longae. Flores ligulati flavi, ligula cuneato-obovati, apice saepius 4-dentati dentibus acutis, circ. 1 cm. longi. Paleae lineares, superne angustissime elongatae. Disci florum stigmata terminaliter caudata. Achaenia obcompressa, tergo papillato-rugoso convexa, corpore ipso atro circ. 2 mm. longa et circ. 1 mm. lata, marginibus anguste alata, apice 2-squamellata squamellis fimbriolatis; facie ventrali glabra vel papillato-scabra, supra infraque valde callosa.

Type specimen: Collected by *John Donnell Smith*, No. 602, in dry, sandy, old fields along coast of Mississippi Sound, Harrison County, Mississippi, September 15, 1885 (Field).

Distribution: Florida and Georgia westward to Mississippi.

Specimens examined: *A. H. Curtiss*, Pensacola, Florida, summer of 1885 (N.Y.); *F. E. Lloyd & S. M. Tracy 527a*, Gulfport, Mississippi, September 8, 1900 (N.Y.); *Charles Mohr*, dry, open, sandy hills, etc., eodem loco, July 4, 1874 (U.S., 2 sheets); *idem*, in woods, Cullman; Alabama, June 1, 1882 (Gray); *idem*, low, open places, Cullman, June, 1883 (U.S., 3 sheets); *idem*, dry hillsides, vicinity of Ashland, Bibb County, Alabama, June, 1883 (U.S.); *idem*, borders of woods and fields, dry openings, Mulberry River Valley, Blount County, Ala-

bama, June 6, 1883 (U.S.); *idem*, sandy soil in open copses, Columbus, Mississippi, June 4, 1888 (U.S.); *idem*, dry bald prairies, Gallion, Alabama, May 25, 1893 (U.S.); *Charles L. Pollard & William R. Maxon 496*, Lithonia, Georgia, August 12, 1900 (N.Y.); *John Donnell Smith 602* (type, Field; cotype, Gray).

A species more closely related to *Coreopsis lanceolata* L. and *C. grandiflora* Hogg. J. Donnell Smith had determined his plant as *C. lanceolata* var. *angustifolia* Torr. & Gray. That variety, however, has a very different habit, the plants being less branched and the leaves being basally clustered and almost always simple. Donnell Smith had shown Asa Gray his Mississippi material, and Gray had called it "a peculiar form" of *C. lanceolata* L. Mohr's material from Pensacola, Florida, likewise had been seen by Gray. Thus, one sheet bears a note stating: "Dr. Gray remarks: 'I have nothing like this. I suppose it may be an altered, coast form of *C. lanceolata*. But it is very peculiar.' " (This note is written on the back of a card which, by strong transmitted light, is seen to have been Donnell Smith's regular herbarium label. This would seem to indicate that Mohr and his contemporary had studied their several specimens mutually and had regarded them as identical.) This same sheet has Mohr's first determination, *Coreopsis lanceolata* var. *angustifolia*, but this he had subsequently crossed out and replaced with *C. grandiflora*. His other foregoing specimens all had been labeled by him as *C. grandiflora*. This interpretation was retained by him in his *Plant Life of Alabama* (Contr. U. S. Nat. Herb. 6: 805. 1901). From *C. grandiflora*, however, our plants differ in their more slender and wiry, less herbaceous stems, in the tendency for some entire stems to have minute, simple leaves (smaller than the simple leaves formed in *C. lanceolata*), and in the tiny achenes, which have the body proper about 2 mm. long and about 1 mm. wide, as against about 2.5 mm. long and about 1.4–1.8 mm. wide in *C. grandiflora*. (A similar or even more pronounced achenial difference separates *C. debilis* also from *C. lanceolata*. Furthermore, the achenes of *C. debilis* have narrow wings [0.2–0.5 mm. wide] while those of *C. grandiflora* and *C. lanceolata* have wings 1 mm. or so in width.)

44. *Coreopsis intermedia* Sherff, Bot. Gaz. 88: 299. 1929.

Herba erecta, plus minusve glabra, forsitan perennis, supra parce ramosa, ± 6 dm. alta, caule subtereti vel moderatim angulato, sulcato. Folia opposita, simplicia, basalia longe tenuissimeque petiolata petiolis usque ad 4.5 cm. longis, laminis oblongo-oblan-
ceolatis vel anguste obtuseque obovatis; principalia caulina sessilia,

late oblongo-lanceolata, ciliata, crassiuscula, apice subacuta, 5–7 (–9.5) cm. longa et 1.2–2 (–3.2) cm. lata. Capitula pedunculata pedunculis 1.5–2.5 dm. longis, radiata, pansa ad anthesin 3.5–4 dm. lata et ± 12 mm. alta. Involucri bracteae exteriores 8–10, lanceolatae vel lineari-lanceolatae, tergo glabratae, margine saepe diaphana ciliatae, apice acutae cartilagineaeque, 4–7 (rariter –8) mm. longae; interiores late lanceolatae, plerumque 12–14 mm. longae. Flores ligulati circ. 8, flavidi, unicolores, obovati vel late oblanceolati, apice trilobati lobo mediano valde emarginato, circ. 1.5 cm. longi. Paleae superne elongatae et valde caudato-attenuatae. Disci florum stigmata apice caudata. Achaenia suborbicularia, valde obcompressa, dorsaliter convexa, brunneo-atra, alata alis membranaceis planis vel rarissime parce incurvatis 0.2–0.4 mm. latis, apice saepe bidenticulata, faciebus perspicue tuberculata, facie ventrali raro callosa, corpore ipso oblongo-obovato vel late oblongo-oblanceolato 2–3 mm. longa et 1.3–2 mm. lata.

Type specimen: Collected by *Julian Reverchon*, No. 2077 pro parte, in sandy woods, Mineola, Texas, June 12, 1900 (Berl.).

Distribution: Known only from type locality and vicinity, Texas.

Specimens examined: *Reverchon*, Pine Island, May 5, 1903 (Mo.); *idem* 2041, sands, Big Sandy, May 27, 1901 (Mo., 2 sheets); *idem* 2077 pro parte (type, Berl.; cotype, Mo.); *idem* 2077 pro parte, sands, Mineola, June 10, 1900 (Mo.).

The stems of the plants examined are uniformly leafy from bottom to top as in *Coreopsis pubescens* and the leaves resemble the glabrous, undivided ones occasionally found in that species. The elongate peduncles, however, also the pronounced differentiation between exterior and interior involucral bracts, are more as in *C. lanceolata*, although not typical for that species.

45. *Coreopsis pubescens* Ell. Sketch Bot. S. Carol. & Georgia 2: 441. 1824. *C. auriculata* Schkuhr, Handb. ed. 2, pl. 260. 1808 (non L.). *C. auriculata* var. γ Torr. & Gray, Fl. N. Amer. 2: 343. 1843. *C. auriculata* var. δ Torr. & Gray, op. cit. 344 (excl. syn. quod *C. pubescens* var. *robusta* est).

Plus minusve pubescens vel hirsuta. . . . *C. pubescens* sensu stricto. Caulis ramique glabri vel glabrati. var. β *robusta*.

Herba perennis, erecta, simplex vel paulum ramosa ramis suberectis, plus minusve pubescens vel hirsuta, 6–12 dm. alta, caule usque ad summam folioso. Folia opposita, polymorpha, saepius 5–10 cm. longa, inferiora longe (2–5 cm.) tenuiterque petiolata altera

saepe sessilia, laminis nunc integris ovalibus vel oblongo-ovatis vel elliptico-lanceolatis nunc (plus minusve irregulariter) 3-5-partitis foliolis lateralibus plerumque multo minoribus ac oblonge lineari-lanceolatis. Capitula tenuiter pedunculata pedunculis 1-2 dm. longis, radiata, pansa ad anthesin 3-5 cm. lata et 8-11 mm. alta. Involucri bractee subaequales plus minusve glabratae, exteriores 8-10, lineari-lanceolatae, plurivittatae, 7-10 mm. longae; interiores ovatae. Flores ligulati circ. 8, flavi, ligula cuneati vel oblongo-cuneati, apice 3-lobati lobo mediano rursus 2-4-lobulato, 1-2.3 cm. longi. Paleae inferne latiores superne elongato-filiformes, demum 6-8 mm. longae, achaenia multum superantes. Florum tubulorum stylorum rami apicem versus abrupte angustati et lineari-appendiculati. Achaenia obcompressa, suborbiculata, circ. 2.8-3 mm. longa, corpore ipso nigra, alis (± 0.5 mm. latis) planis integris saepe purpurea, faciebus glabra vel papillata, ventraliter apice basique saepius gibbo cartilagineo munita, apice vero squamellis fimbriatis plerumque 2-dentata.

Type specimen: None cited, but habitat given as "western districts of Georgia."

Distribution: Virginia, Illinois, and Oklahoma southward to Florida, Alabama, and Louisiana. Sometimes escaped or adventive elsewhere.

Specimens examined (it may well be that these determinations, most of which were made many years ago, include a few specimens which are properly referable to the var. *robusta*): *Samuel M. Bain* 95 p.p., fields, Henderson, Tennessee, May, 1893 (Gray); *H. C. Beardslee & C. A. Kofoed*, alt. 900 meters, Great Smoky Mountains, Swain County, North Carolina, August, 1891 (Field; Gray); *Beyrich*, grassy banks of rivers, Georgia (Berl., 2 sheets); *F. Boynton*, Highlands, North Carolina, 1889 (Gray; Mo.); *Buckley*, Alabama (Gray); *B. F. Bush* 172A, uncommon, in dry ground, McDonald County, Missouri, September 1, 1893 (Gray); *idem* 6041, woods, Webb City, Missouri, July 23, 1910 (N.Y.); *idem* 6137, woods, Monteer, Missouri, August 8, 1910 (Gray); *idem* 6531, eodem loco, October 22, 1911 (Mo.); *idem* 7872, open woods, eodem loco, October 8, 1916 (Gray); *Carpenter*, Louisiana (Gray); *A. W. Chapman*, mountains of Georgia (Field); *A. H. Curtiss* 17, rich woods, Jackson County, Florida, June 18, 1886 (Gray; foliis sed non achaenis *C. auriculatae* adpropinquans); *H. Eggert*, dry woods, Jefferson County, Missouri, July 8, 1879 (Gray); *George Engelmann*, Mountain Creek bottom, Missouri, 1833 (Mo.); *idem*, St. Louis, Missouri, August, 1863 (Berl.); *Henry*

A. Gleason 2749, dry, upland woods, Makanda, Illinois, July 22, 1902 (Gray); *idem 2750*, cleared uplands along railroad, eodem loco et tempore (Gray); *P. Graebner*, cult. in Hort. Berol. ex sem. ex Amer. Boreali missis, August 5, 1910 (Berl.); *J. M. Greenman 3771*, Sheffield Mountain, near Arcadia, Missouri, July 22, 1915 (Mo.); *H. E. Hasse*, Desoto, Missouri, July, 1887 (Field); *Elihu Hall*, central Illinois (Gray); *W. Hoffman*, Corn Creek, vicinity of Rolla, Missouri, July 15, 1871 (Berl., 2 sheets); *Hort. Berol.*, 1806–1812 (Berl.); *Hort. Lips.* ex Amer. septentr. (Berl.); *Hort. Paris*, 1816 (Berl.); *H. W. Houghton 3864*, common, open woods, near Shawneetown, Oklahoma, May 28, 1916 (Gray); *H. D. House 4023*, below 900 meters alt., sandy soil along Avery's Creek, Pisgah Forest, North Carolina, September, 1908 (Gray); *John H. Kellogg*, Allenton, Missouri, August 12 and 13, 1884 (Mo.); *idem*, St. Louis, Missouri, July 15, 1903 (Mo.); *George W. Letterman*, Allenton, Missouri (Mo.); *Kenneth K. Mackenzie 328*, common in woods, Pleasant Grove, Missouri, July 21, 1897 (Field); *Michaux*, North America (Berl.); *E. J. Palmer 2317* and *2317A*, open woods, Forest Mill, Missouri, June 23, 1909 (Gray); *idem 2513*, barrens, Joplin, Missouri, July 20, 1909 (Gray); *idem 29347*, rich, moist soil, vicinity of Beaver, Arkansas, October 24, 1925 (Gray); *Thomas C. Porter*, Hawk's Nest on New River, 9 miles above Kanawha Falls, West Virginia, July 21, 1880 (Field; N.Y.); *Ns. Riehl 65*, very moist ground, St. Louis, Missouri, July, 1838 (Berl.); *F. Rugel*, in rocky, wet places of the mountains at Broad River, North Carolina, June–July, 1841 (Berl.; N.Y.); *idem*, in open places and along roads, between Quincy and Aspalaga, Florida, May, 1843 (Mo.); *Albert Ruth 655*, along railroad, Valley Head, Alabama, July, 1898 (Mo.); *idem 665*, Lulu Falls, Lookout Mountain, Georgia, July, 1898 (N.Y.); *E. M. Shepard*, Greene County, Missouri, July, 1880 (Gray); *Earl E. Sherff 989*, southeast of Pacific, Missouri, August 7, 1910 (Gray); *idem 5005*, cult., Harvard Univ. Bot. Gard., August 12, 1929 (Berl.; Field); *C. W. Short 42*, Lexington, Kentucky, 1831 (Gray); *John K. Small*, alt. 750–1,500 meters, on slopes of Thomas Bald, boundary of North Carolina and Georgia, August 19, 1893 (Field); *idem*, alt. 1,560 meters, summit of Thomas Bald, August 19, 1893 (Field); *idem*, base of Currahu Mountain, Toccoa, Georgia, July, 1896 (N.Y.); *Huron H. Smith 1089*, along railway tracks, Des Arc, Missouri (Field); *idem 2456*, Blue Ridge Mountains, Fannin County, Georgia, July 22, 1909 (Field); *idem 2582*, eodem loco, August 7, 1909 (Field); *John Donnell Smith*, alt. 1,410 meters, north face of cliffs, Wildcat Ridge,

west flank of Whitesides Mountain, 6 miles northeast from Highlands, North Carolina, August 21, 1882 (Gray); *idem*, alt. 1,440 meters, face of cliffs, eodem loco et tempore (Field; Mo.); *idem*, alluvial banks of river at Cumberland Falls, Whitler County, Kentucky, August 23, 1883 (Field); *idem*, thickets, alluvial banks of Soquee River, Habersham County, Georgia, September 13-15, 1883 (Field; Gray); *idem*, edge of woods, banks of Oconee River, above Milledgeville, Georgia, August 16, 1884 (Field; Gray); *idem*, gullies in high, wooded hills west of Cahawba River, Perry County, Alabama, September 2, 1885 (Field; Gray); *G. W. Stevens 2387*, shady, grassy thicket in woods near Ottawa, Oklahoma, August 27, 1913 (Gray); *Roland Thaxter*, Cullowhee, North Carolina, June-July, 1887 (Gray); *R. E. Woodson, Jr. 655*, Crawford County, Missouri, July 10, 1926 (Mo.).

Passes into the var. *robusta*.

Coreopsis pubescens var. β *robusta* A. Gray ex Eames, *Rhodora* 18: 239. 1916. *C. testudinea* Shuttl. in herb.

E specie caule ramisque glabris vel glabratiss differt.

Type specimen: Collected by Asa Gray and John Carey, North Branch of New River, North Carolina, July, 1841 (Gray).

Distribution: Virginia and North Carolina westward to Kentucky.

Specimens examined: *Biltmore Herb. 307c*, slopes of Cedar Cliff Mountain, Buncombe County, North Carolina, August 2, 1897 (Gray; Mo.); *John Carey*, North Carolina (N.Y.); *idem* & *Asa Gray*, North Branch of New River, etc. (type, Gray; cotype, N.Y.); *idem*, Virginia, July, 1841 (Gray); *E. H. Eames 8825*, growing about 1 meter tall, waste grounds, Bridgeport, Connecticut, July 21, 1914 (Gray); *M. L. Fernald & Bayard Long 19265*, fallow field northeast of East Brewster Station, Brewster, Massachusetts, July 20, 1919 (Gray); *P. A. Rydberg 9445*, alt. 1,650-1,800 meters, Craggy Mountains, Buncombe County, North Carolina, July 21, 1925 (N.Y.; Pom.); *John Donnell Smith*, growing 4 ft. high, upland meadow, Richland Gap, Heywood County, North Carolina, August 14, 1882 (Gray; Mo.); *idem*, alluvial soil and sandy bank of river, Cumberland Falls, Whitley County, Kentucky, August 23, 1883 (Gray; Mo.).

Originally regarded by Asa Gray (*Amer. Journ. Sci.* 42: 45. 1841) as a "larger form of *Coreopsis auriculata*, with nearly all the leaves undivided." At times very distinct, again scarcely distinguishable from the species proper.

46. *Coreopsis heterolepis* Sherff, Bot. Gaz. 89: 365. 1930.

Herba perennis, glabra, caule angulata, ramosa, dense foliosa, 3–6 dm. alta. Folia membranacea plus minusve dimorpha: basalia dense congregata, petiolata petiolis planis angustissime alatis usque ad 6 cm. longis, petiolo adjecto 8–12 cm. longa, indivisa spatulata vel oblonga apice obtusa, alia pinnata foliolis nunc linearibus nunc oblanceolatis nunc oblongis nunc rhomboideo-subovatis ac etiam 1–1.7 cm. latis, lateralibus saepius 1–2 jugis ac multo minoribus; caulina numerosissima, petiolata petiolis anguste marginatis marginis basi rarius setis pluriloculatis sparsim positis obsita circ. 1–2.5 cm. longis petiolo adjecto circ. 6–10 cm. longa, plerumque pinnata, foliolis anguste linearibus, 2–8 cm. longis et 0.3–2.5 mm. latis, apice subacutis, lateralibus 1–2 jugis. Capitula tenuissime pedunculata pedunculis 1–2 dm. longis, radiata, pansa ad anthesin 3–4 cm. lata et 5–7 mm. alta. Involucri glabri vel subglabri bractee exteriores angustissime lineares, saepius patentes, apice acutae, 5–11 mm. longae; interiores ovato-lanceolatae nunc breviores nunc longiores. Flores ligulati circ. 8, omnino flavi, ligula cuneato-obovati, apice obtuse 4-dentati, circ. 1.5–1.8 cm. longi. Paleae superne capillares, circ. 4–5 mm. longae. Disci florum stigmata caudato-elongata. Achaenia minima plano-convexa, corpore nigro oblongo vel oblongo-ovato ipso tantum circ. 1.3–1.7 mm. longa et circ. 1–1.5 mm. lata, faciebus levibus vel papillato-rugosa, marginibus anguste alata alis rubris circ. 0.2–0.4 mm. latis, apice minutissime 2-squamellata squamellis fimbriolatis.

Type specimen: Collected by *Ernest Jesse Palmer*, No. 6962A, on dry, sandy bluffs, Heber Springs, Cleburne County, Arkansas, October 30, 1914 (Mo., 4 sheets).

Distribution: Known only from type locality.

Specimens examined: *Palmer 6962A* (4 type sheets, Mo.).

47. *Coreopsis grandiflora* Hogg ex Sweet, Brit. Fl. Gard. 2: pl. 175. 1826; Nutt. Trans. Amer. Phil. Soc. 2, 7: 358. 1841. *C. Boykiniana* Nutt. loc. cit. *C. heterophylla* Nutt. loc. cit. (nec alior.). *C. grandiflora* var. *subintegrifolia* Torr. & Gray, Fl. N. Amer. 2: 345. 1843.

Caules foliaque pubescentia vel piloso-hispida. var. γ *pilosa*.
Caules et foliorum facies plerumque glabrata.

Foliorum segmenta omnia anguste linearia vel quidem filiformia.
var. δ *Harveyana*.

Foliorum simplicium lamina vel divisorum segmenta latiora.

Folia caulis basim versus adgregata, pedunculis crassis elongatis (saepe 2-3 dm. longis).....var. *β longipes*.

Folia subaequaliter distributa, pedunculis tenuioribus saepius 0.8-1.5 dm. longis.....*C. grandiflora* sensu stricto.

Herba perennis vel raro annua, erecta vel adscendens, plerumque non pubescens nisi petiolis ciliatis, 3-6 dm. alta, saepe ramosa, plerumque foliosa. Folia opposita, plus minusve petiolata petiolis saepius 0.5-4 cm. longis, inferiora simplicia vel irregulariter partita lamina (vel segmento terminali) spathulata vel lanceolata, petiolo adjecto saepius 5-10 cm. longa; alia plerumque 3-5-partita (raro simplicia) segmentis interdum rursus 3-5-partitis segmentis ultimis linearibus vel lanceolato-linearibus, plerumque 1.2-5 mm. latis. Capitula saepius solitaria, moderate pedunculata pedunculis tenuibus saepius 1-1.5 dm. longis, radiata, pansa ad anthesin 3-6 cm. lata et 8-12 mm. alta. Involucri bracteae exteriores 7-10, saepe dupliciter dispositae, lanceolato-subulatae, infra saepe subdilatae, margine ciliatae et plus minusve albidae, 5-9 (raro -18) mm. longae; interiores ovatae, nunc paulo longiores nunc paulo breviores. Flores ligulati plerumque 8, flavi, ligula cuneato-obovati, apice 3-lobati lobo mediano majore rursus 2-partito, 1.3-2.5 cm. longi. Paleae lineares, infra latiores supra attenuatae filiformesque, demum circ. 6-7 mm. longae. Flores tubulosi summa aurantiaci, stylorum ramis apice perspicue cuspidati. Achaenia obcompressa et dorso convexa, circumambitu (alis inclusis) orbiculata, circ. 2.5 mm. longa, corpore nigra, faciebus glabra vel minute papillata, ventraliter apice basique saepe verruca callosa magna ornata, marginibus alata alis planis vel vix incurvatis quam corpore dimidio angustioribus, apice minute biaristata aristis squamellatis fimbriolatisque vel demum calva.

Type specimen: Sent by a *Mr. Hogg* from New York to England as a new species and represented by Robert Sweet's type plate (loc. cit.).

Distribution: Missouri and Kansas southward to Florida, Louisiana, and New Mexico.

Specimens examined: *H. C. Benke* 3279, Pensacola, Florida, March 9, 1922 (Field); *George D. Butler* 16, prairies, 1.5 miles north of Limestone Gap, Oklahoma, June 13, 1877 (Field); *F. S. & Esther S. Earle* 73, 4 miles northwest of Auburn, Alabama, July 13, 1899 (Mo.); *Esem E. Hall*, Texas, 1877 (Gray); *W. H. Haller* 982, low ground, Wilson County, Kansas, 1895 (Gray); ex *Hort. Berol.* (Gray); *H. W. Houghton* 3567, common on hillsides, vicinity of Tishomingo, Oklahoma, April 15, 1916 (Gray); *Dr. Leavenworth*, Louisiana

(Gray); *Le Conte*, North America (Gray); *George W. Letterman*, Gratiot, Missouri, May 30, 1897 (Field); *idem*, along Frisco Railroad near St. Louis, Missouri, August, 1899 (Mo.); *Lindheimer*, Houston, Texas, April, 1842 (Gray); *Kenneth K. Mackenzie* 100, frequent, introduced along railroads, Kansas City, Missouri, June 5, 1898 (Field); *Dr. Pitcher*, Arkansas (Gray); *J. Reverchon*, sandy loams, woods, Dallas, Texas, May, 1874 (Mo.); *idem*, Dallas, May, 1876 (Gray); *idem* 513, sandy forests, Dallas, May, 1883 (Mo.); *idem* 1478, rich sands, Dallas, May (Berl.; Field); *Albert Ruth* 482, in rich woods near Arlington, Texas, May 24, 1920 (Field, 2 sheets); *J. H. Schuette* 76, cult., Green Bay, Wisconsin, August 28, 1900 (Field); *John K. Small*, alt. 300–330 meters, on Little Stone Mountain, De Kalb County, Georgia, July 7, 1893 (Field, 2 sheets; Gray); *H. E. Wheeler* 62, near Hazen, Grand Prairie, Arkansas, May 22, 1924 (Field); *Charles Wright*, Texas (Gray).

***Coreopsis grandiflora* var. β *longipes* (Hook.) Torr. & Gray, Fl. N. Amer. 2: 345. 1843. *C. longipes* Hook. Bot. Mag. pl. 3586. 1837.**

Folia caulis basim versus dense vel moderate adgregata, plerumque simplicia vel pinnata; pedunculis crassioribus elongatis saepe 2–3 dm. longis.

Type specimen: Collected by *Thomas Drummond* in Texas and illustrated by Hooker with type plate (loc. cit.).

Distribution: Texas.

Specimens examined: *Elihu Hall*, Texas, 1877 (Field); *idem* 342, wet prairie, Houston, April 18, 1872 (Field); *Earl E. Sherff* 278, cult., St. Louis, Missouri, July 7, 1910 (Field).

***Coreopsis grandiflora* var. γ *pilosa* Sherff, Bot. Gaz. 89: 368. 1930.**

A specie caulibus foliisque pubescentibus saepe etiam longe patenteque piloso-hispidis differt.

Type specimen: Collected by *Stewardson Brown*, *Nathaniel L. Britton*, and *Peter Bisset*, No. 2011, cultivated at Agricultural Station, Island of Bermuda, May 22–June 6, 1914 (N.Y.).

Distribution: Known in a native state only from northern Georgia.

Specimens examined: *Brown, Britton, & Bisset* 2011 (type, N.Y.); *John H. Kellogg*, cult., Missouri Bot. Gard., May 23, 1911 (Mo.); *John K. Small*, alt. 210–300 meters, between Alcovy River and No

Business Creek, Oconee and Gwinnett Counties, Georgia, July 14, 1893 (Field, 2 sheets; U.S.); *idem*, alt. 225 meters, on banks of Yellow River near McGuire's Mill, Gwinnett County, July 11, 1893 (Mo.); *idem*, alt. 255 meters, on banks of Yellow River, near Yellow River (Store), Gwinnett County, July 20, 1893 (Field).

The two cultivated specimens examined have a very unique aspect because of their marked hispidity. In spontaneous material the hairs are shorter and less spreading.

Coreopsis grandiflora var. δ **Harveyana** (A. Gray) Sherff, Bot. Gaz. 94: 593. 1933. *C. Harveyana* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 292. 1884.

Foliorum segmenta anguste linearia vel quidem filiformia; achaeniis paulo minoribus, circ. 2 mm. longis.

Type specimen: Collected by *Francis LeRoy Harvey*, No. 22, on cliffs near Fort Smith, Arkansas, June (Gray).

Distribution: Missouri and Arkansas, perhaps also Kansas and Oklahoma.

Specimens examined: *Anon.*, Arkansas National Forest, Arkansas, 1909 (U.S.); *B. F. Bush* 158, Sheffield, Missouri, June 12, 1894 (Berl.); *Frederick V. Coville* 127 Ark., Mountain Park near Little Rock, Arkansas, July 17, 1887 (U.S.); *H. Eggert*, Williamsonville, Missouri, June 11, 1893 (Field); *F. L. Harvey* 22 (type, Gray, cum *C. tinctoria* Nutt. pro parte parva commixta); *E. J. Palmer* 8120, wet, open hillsides, Malvern, Arkansas, June 23, 1915 (Mo.); *H. S. Reynolds*, Judsonia, Arkansas, May 31, 1877 (Field); *Huron H. Smith* 1150, railway tracks, Des Arc, Iron County, Missouri, June 8, 1908 (Field).

The type sheet of *C. Harveyana* Gray bears 3 specimens. The first at the left is *C. tinctoria* Nutt., having the oblong, wingless achenes, the bicolored ligules, the subtruncate style branch tips, the linear-oblong paleae, etc. of that species. The other two specimens are very distinct, having orbiculate, winged achenes, caudate-conical tips to the style branches, upwardly elongate-attenuate paleae, etc. Gray clearly was misled by the admixture of the small *C. tinctoria* specimen, for in his Synoptical Flora he separated *C. Harveyana* partly on the basis of the "rays sometimes brown-purple at base." Had the rays of *C. Harveyana* really possessed the tendency toward a bicolored state, a separation of the type as a new species would have been justified. Since the rays were really yellow, however, the type had nothing left to separate it from *C. grandiflora* proper except the

narrower leaf divisions and the slightly smaller achenes. These differences Gray himself elsewhere (e.g. *C. Drummondii* Torr. & Gray, et var. *Wrightii* ipsi, Syn. Fl. N. Amer. 1, pt. 2: 291. 1884) considered as connoting a variety. (A supposedly duplicate sheet of the Harvey material at St. Louis [Mo.] bears all *C. tinctoria* Nutt.!)

48. *Coreopsis auriculata* L. Sp. Pl. 908. 1753. *Chrysanthemum hirsutum* Virginian. *auriculato Dulcamaraefolio octopetalon*. *Chrysanth.* etc. Ptukenet Alm. *pl.* 83, *f.* 5. 1691; Pluk. Phytogr. *pl.* 242, *f.* 4. 1769. *Chrysanthemum trifoliatum minus* Virgin. *foliis obtusioribus, hirsutis* Morison Hist. Univ. Oxon. 3, sect. 6, *pl.* 3, *f.* 45 (46). 1715. *Cymbaearca auriculata* (L.) Hort. Reg. Matrit. ex Elench. Pl. Hort. Bot. Destremx 1805: 19. 1806. *Leachia trifoliata* Cass. Dict. Sci. Nat. 25: 389. 1822 (ex synonym. *C. auriculata* L.). *Chrysomelea auriculata* (L.) Tausch Hort. Canal. 1823. *Coreopsis auriculata* var. *diversifolia* Ell. Sketch Bot. S. Car. Ga. 2: 437. 1824. *Chrysomelea auriculata* (L.) Tausch ex DC. Prodr. 5: 571. 1836 (sphalm). *Coreopsis auriculata* var. *a* Ell. ex DC. loc. cit. *Coreopsis auriculata* var. *glabrata* DC. loc. cit. *Anacis auriculata* (L.) Schrank, Denkschr. Akad. Muench. Math. Nat. 5: 7. 1817. *Coreopsis diversifolia* DC. loc. cit. (nec alior.). *Coreopsis auriculata* var. *β* Torr. & Gray, Fl. N. Amer. 2: 343. 1843. *Coreopsis oculata* Hort. in Handlist Hardy Rock Pl. Harvard Univ. Bot. Gard. 10. 1927 (sphalm).

Herba perennis, erecta vel adscendens, simplex vel ramosa, pubescens vel hirsuta vel supra interdum glabrata, inferne foliosa, basi stolonifera. Folia opposita, petiolata petiolis nunc tenuibus nunc latis saepe elongatis itaque laminas plurimum excedentibus, petiolo adjecto plerumque 4–12 cm. longa; lamina membranacea, ovato-orbiculata vel elliptico-ovata, apice obtusa vel subacuta, lateribus integra vel 1–2-lobata lobis parvis basalibus. Capitula solitaria ramos elongatos (saepius 1–2.5 dm. longos) nudos terminantia, radiata, pansa ad anthesin 3.5–5 cm. lata et circ. 9–10 mm. alta. Involucri bracteae subaequales, exteriores circ. 8, pallidae, ovato-oblongae vel lanceolato-oblongae, apice rotundatae vel subacutae, lateribus saepe tenuissime albido-marginatis glabrae vel hispido-ciliatae; interiores ovatae. Flores ligulati circ. 8, flavi, ligula obovati vel late cuneati, apice 3-lobati lobo mediano emarginato, 1.5–2.3 cm. longi. Paleae anguste lineares, superne attenuatae, demum 6–9 mm. longae. Florum tubulosorum ramorum styli terminis caudato-cuspidati. Achaenia oblanceolata vel obovata, obcompressa, incurvata, nigra, glabra vel minute papillata, marginibus anguste alata alis demum cartilagineis involutisque, 2.2–2.9

mm. longa, apice primo minute bisquamellata demum plerumque calva.

Type specimen: Linnaeus' first citation of literature is that of "Gron. virg. 105." This refers to a plant collected by John Clayton in Virginia and perhaps still extant in London (Brit.). Linnaeus cited also the two illustrations by Plukenet (loc. cit.) and the one by Morison (loc. cit.); all three are clear and agree unmistakably with each other.

Distribution: Virginia and Kentucky southward to northern Florida, Mississippi, and Louisiana. Cited also for Illinois by Robinson and Fernald (Gray's New Man. 838. 1908).

Specimens examined: *Biltmore Herb.* 176, rich woods, Biltmore, North Carolina, May 15, 1896 (Field; Gray); *idem* 176b, eodem loco, May 20, 1897 (Field; Gray); ex herb. G. W. Bischoff (Gray); S. B. Buckley, Alabama, June, 1841 (Mo.); *idem*, Virginia (Gray); William M. Canby 53, Stone Mountain, Georgia, May 3, 1899 (Gray); *idem* 54, Chattahoochie, Georgia, May 2, 1899 (Gray); A. W. Chapman, mountains of Georgia (Field); Miss M. A. Coe, Atlanta, Georgia, May 6, 1903 (Gray); A. H. Curtiss, Bedford County, Virginia, June 1, 1871 (Gray); *idem*, eodem loco, May 31, 1872 (Field); *idem* 1485, rich woods, Jackson County, Florida, June (Berl.; Field); F. S. Earle & C. F. Baker, Auburn, Alabama, April 4, 1897 (Field); J. Hale, Alexandria, Louisiana (Gray); T. G. Harbison, Highlands, North Carolina, May, 1902 (Gray); R. A. Harper 74, Talladega County, Alabama, April 16, 1906 (Gray); ex herb. Dr. A. C. Hexamer & Dr. F. W. Maier, rich woods, Soluda River, Lexington District, South Carolina, June 14, 1855 (Gray); ex *Hort. Berol.* (Gray); M. E. Hyams, Statesville, North Carolina, July, 1880 (Pom.); C. Mohr, open woods throughout the mountains, Lawrence County, Alabama, May, 1880 (Field); ex herb. *eiusdem*, Winston County, Alabama, May 1, 1881 (Field); P. H. Rolfs 392, Pensacola, Florida, April 11, 1894 (Field); Albert Ruth, open woods, near Knoxville, Tennessee, May, 1895 (Gray; Pom.); *idem* 67, rich woods, Knox County, Tennessee, June 15, 1900 (Gray); *idem* 652, corses, Knoxville, May, 1898 (Mo.); C. W. Short, Lexington, Kentucky, 1835 (Gray); J. K. Small & A. A. Heller, near R. and D. Railroad, between Fall Creek and Danville, Virginia, June 3, 1891 (Field); ex Dr. Steetz, ex Lexington, Kentucky (Berl.); J. T. Stewart, northern Mississippi, 1863 (Field); K. A. Taylor, dry, sandy pine woods, Columbia, South Carolina, May, 1890 (Field); G. R. Vasey, North Carolina, 1878 (Field); E. H. Wharf, North Carolina (Gray).

49. *Coreopsis congregata* Blake, Journ. Wash. Acad. Sci. 19: 275. 1929.

Herba annua, gracilis, erecta, subsimplex, sparsim pubescens, 1–3.5 dm. alta, caule sulcato-striato, sparsim piloso praecipue superne pilis plerumque adscendentibus, internodiis 2–5 cm. longis. Folia opposita sessilia vel petiolata petiolis pilosissimis usque ad 1 cm. longis, omnino circ. 2–4 cm. longa, pinnatifida vel inferiora bipinnatifida, circumambitu triangulata; segmentis ultimis membranaceis, oblongis vel ovatis vel lanceolato-ovatis, acutis vel obtusis, calloso-mucronulatis, utrinque pilosis, marginibus ciliatis, jugo infimo paene distincto. Capitula pauca (1–7), nunc solitaria nunc corymbosa, tenuissime pedunculata pedunculis sparsim pilosis erectis nudis vel minute 1–2-bracteatis 2–5 cm. longis, radiata, pansa ad anthesin 1–1.5 cm. lata et 0.5–0.7 cm. alta. Involucri pilosi bractee exteriores circ. 8, tenues, anguste spathulatae vel lineares, obtuse calloso-apiculatae, 2.5–3.5 mm. longae et circ. 0.7 mm. latae, 3-nervatae nervo mediano multo magis perspicuo; interiores elliptico-oblongae, apice obtuso ciliolatae, aureae, 5–7-nervatae, 4.5–4.8 mm. longae et circ. 1.8 mm. latae. Flores ligulati 8, aurei, steriles, ligula elliptico-oblongi, apice subintegri, tantum circ. 5-nervatae, circ. 6–7.5 mm. longi et 2.5–2.8 mm. lati, tubo glandulis stipitatis instructo. Paleae lineares, acutae vel obtusae, glabrae, flavae, circ. 4-vittatae, circ. 3.5 mm. longae. Flores tubulosi 12–20, corollis aureis tubo glandulis stipitatis instructis, stylorum ramis termino anguste caudato-appendiculatis. Achaenia exteriora obcompressa, obovata vel cuneato-rotundata, brunneo-atra, glabra, tergo leviter vel superne plus minusve muricata, ventris mediane unicostati ac crustaceo-mamillati basi callosa, marginibus incrassatis subbrunneis circ. 0.3 mm. latis longitudinaliter rugulosa infra sinuata supra in lobos paucos rotundatos divisa, apice parce depressa ac exaristata, 2–2.3 mm. longa et 1.3–1.5 mm. lata; interiora angustiora.

Type specimen: Collected by Ynes Mexia, No. 445, common at altitude of 1,200 meters, growing in masses, in damp places in openings in oak and pine forests, trail from El Batel to Pica de Aguila, Sierra Madre, State of Sinaloa, Mexico, November 14, 1925 (Gray).

Distribution: Known only from type locality in State of Sinaloa, Mexico.

Specimens examined: *Mexia 445* (type, Gray; cotype, Mo.).

50. *Coreopsis nuecensis* Heller, Bot. Expl. S. Texas 106. 1895. *Coreopsis coronata* Hook. Bot. Mag. pl. 3460. 1836 (nec alior.).

Herba annua, sparsim hirsuta vel fere glabra, 2-6 dm. alta, caulibus erectis sed debilibus, basim versus ramosis, superne nudis. Folia opposita jugis saepe remotis, summa subsessilia, alia petiolata petiolis latis angustissimisve hispido-ciliatis (pilis pluriarticulatis) usque ad 5 (quidem ad 12) cm. longis, petiolo adjecto 4-10 (-20) cm. longa, lamina nunc late ovalia vel oblongo-spathulata integra, nunc pinnatim secta segmentis usque ad 5, ultimo multo maximo, lateralibus saepius alternis raro lobatis imis saepe petiolulatis. Capitula ramos nudos saepe 2-3 dm. longos (pedunculos) terminantia, radiata, pansa ad anthesin circ. 3.5-4.8 cm. lata et \pm 1 cm. alta. Involucri bracteae exteriores circ. 8, oblongo-lanceolatae vel anguste deltoideo-ovatae vel subulatae, tergo glabratae, apice angusto saepius rotundatae, lateribus saepe diaphanae, marginibus ciliatae setis pluriloculatis, 5-8 mm. longae, quam interiores ovatae tergo glabrae vel albido-setosae apice subacutae paulo breviores. Flores ligulati circ. 8, ligula cuneato-ovati, basim versus maculis magnis atro-sanguineis vel brunneo-rubris ornati aliter flavi, apice 3-lobati lobo mediano multo majore plerumque in 2 lobulos hos saepe emarginatos rursus diviso, 1.5-2 cm. longi. Paleae lineares, supra demum angustissimae ac coloratae, 3-6 mm. longae. Flores tubulosi nunc flavidi nunc superne purpurascentes, stylorum ramis crasso-truncatis minute ac abrupte mucronatis. Achaenia obcompressa, circumambitu alis inclusis obovato-orbiculata circ. 4 mm. longa et circ. 4 mm. lata, dorso (convexo brunneo-nigro) spinulis saepe capitatis dense ventre (concavo utrinque plerumque perspicue calloso) sparsim munita, alata alis membranaceis brunneis irregulariter incisus vel lobatis circ. 1 mm. latis, apice 2 squamellis vel spinulis usque ad 0.4 mm. longis munita.

Type specimen: Raised from seed collected by *Thomas Drummond* in Texas, about 1835.

Distribution: Southeastern Texas.

Specimens examined: *Berlandier* 1802, from Bejar (Bexar) to Austin, Texas, April, 1828 (Gray). *A. H. Curtiss* 6362, waste ground, escaped from cultivation, St. Augustine, Florida, April 13-May 18, 1898 (Gray; Mo.); *Thomas Drummond* 199, Texas (Gray); *Elihu Hall*, cult. e sem. texanis, Athens, Illinois, 1864 (U.S.); *Hort. Cantabr.*, cult. anno 1848 e sem. texanis a Lindheimero lectis (Gray, 2 sheets); *idem*, cult., September, 1856 (Mo.); *Marcus E. Jones* 29511, Kingsville, Texas, March 29, 1932 (Pom.); *idem* 29512, Encino, Texas, March 28, 1932 (Pom.); *F. Lindheimer*, prairies west of the Brazos River, Texas, April (Mo.); *idem* 363, Guadeloupe

bottoms at Victoria, Texas, February, 1845 (Mo.); *C. Mohr*, cult. e sem. texanis, Mobile, Alabama, May 10, 1887 (U.S.); *H. Ness 2078*, moist forest lands, Brazos County, Texas, April, 1900 (Mo., 2 sheets); *E. J. Palmer 9144*, sandy, open ground, Inez, Texas, March 11, 1916 (Mo.); *Earl E. Sherff 5017*, cult. in Harvard Univ. Bot. Gard. (Hort. Cantabr.), August 12, 1929 (Field; Kew); *B. C. Tharp 5635*, Woodboro, Texas, March 17, 1929 (U.S.); *Tracy 8925* p.p., Victoria, Texas, April 27, 1905 (Mo.).

Heller's name *C. nuecensis* goes back by direct synonymy to the name *C. coronata* Hook., which it supersedes because of the homonym *C. coronata* L. Heller's cited specimen (*A. A. Heller 1548*, Corpus Christi, Texas, April 11, 1894), however, was very different from *C. coronata* Hook. and was, indeed, at the time an undescribed species. It was later named *C. similis* Boynt. (qu. vide).

51. *Coreopsis cordylocarpa* A. Gray, Proc. Amer. Acad. 22: 428. 1887.

Perennis, fruticosa, multicaulis, foliosa, 1.5–1.8 meters alta, brevissime adpresso-hispida, caulibus subtetragonis. Folia tenuiter petiolata petiolis 1–3.5 cm. longis, petiolo adjecto plerumque 0.7–2 dm. longa, submembranacea, pinnatim 3–5-partita foliolis simplicibus vel rursus 2–3-fidis, segmentis ultimis linearibus vel anguste oblongo-lanceolatis saepius 3–11 mm. latis, margine indurato-crasiusculis et apicem acutum subacuminatumve versus acriter (interdum inciso-) dentatis. Capitula subcymosa pedunculata pedunculis tenuibus folia paulo vel multo superantia, radiata, pansa ad anthesin 3–4 cm. lata et circ. 1 cm. alta. Involucri plus minusve hispidi bractee subulatae, exteriores lineares 4–6 mm. longae, quam interiores lanceolatae saepe paulo longiores. Flores ligulati circ. 10, lutei, ligula oblongi, apice integri vel denticulati, 1.5–2.2 cm. longi. Paleae oblongo-lineares, glabrae, apice acutae, demum 5–7 mm. longae. Florum tubulosorum styli rami apice conico-angustata. Achaenia obcompressa-clavata, glabra, exalata, brunneo-nigra, obscure longitudinaliterque striata, circ. 8–12 mm. longa et \pm 1.5 mm. lata, apice contracto disco parvo calvo terminata.

Type specimen: Collected by *Edward Palmer*, No. 172, at Río Blanco, State of Jalisco, Mexico, July, 1886 (U.S.).

Distribution: Known only from State of Jalisco, Mexico.

Specimens examined: *C. R. Barnes & W. J. G. Land 155*, alt. 1,560 meters, bank of stream, Sierra de San Esteban, State of Jalisco, September 28, 1908 (Field, 2 sheets); *Palmer 172* (type, U.S.;

cotypes, Gray; N.Y.); *C. G. Pringle 2367*, river banks, near Guadalajara, State of Jalisco, October 7, 1889 (Field; Gray; N.Y.); *idem 9885*, alt. 1,500 meters, banks of Río Blanco, near Guadalajara, July 31, 1902 (Berl.; Field; Gray; N.Y.); *idem 11506*, eodem loco, October 20, 1903 (Field; Gray).

52. *Coreopsis elgonensis* Sherff, Bot. Gaz. 80: 374. 1925.

Planta erecta, perennis, ramosa, 8–10 dm. alta; ramis angulatis, glabris, infra ligneis, internodiis numerosis et saepe tantum 3–10 mm. longis. Folia opposita, numerosa, sessilia, tantum circ. 1–1.8 cm. longa, ternatim divisa, foliolis membranaceis, margine ciliatis, faciebus atro-punctatis et interdum sparsissime hispidis, cuneatis, ternatim lobatis vel integris, segmentis ultimis acerrime apiculatis, plerumque 2–3 mm. latis. Capitula pauca in corymbis disposita pedunculis 2–9 cm. longis, radiata, pansa ad anthesin 2.5–3.5 cm. lata et 8–11 mm. alta. Involucri bractee exteriores 6–11, lineares, supra latiores, apice acutae, plerumque glabratae, 5–9 mm. longae; interiores lanceolatae, hispidae, paulo breviores. Flores ligulati 8–12, flavi, ligula anguste elliptico-oblongeolati, apice rotundati sed minute plus minusve denticulati, 8–12 mm. longi et 3–4.5 mm. lati. Paleae oblongo-lanceolatae, brunneae, pluristriatae, apice saepe longo-attenuatae, circ. 6–7.5 mm. longae. Disci florum stigmata caudato-attenuata. Achaenia late lineari-oblonga, plana, omnino atra, glabra, exaristata, 3.5–4.8 mm. longa et 1.1–1.3 mm. lata, marginibus non vere membranaceis.

Type specimen: Collected by *R. A. Dummer*, No. 3304, locally frequent, at altitude of 3,900 meters, in thicket at edge of cliff, west side of crater, Mount Elgon, Uganda, British East Africa, January, 1918 (Kew).

Distribution: Known only from type locality.

Specimens examined: *Dummer 3304* (type, Kew).

Strongly suggestive, in general habit, of such South American species as *Coreopsis polyactis* and *C. senaria*. The many small, sessile, cuneate, ternate or biternate leaves appear at first glance to be in whorls rather than in pairs. Correlated with the leaf abundance is the shortness of the internodes. Thus, for example, one branch of the type is seen to have 28 internodes in a length of 2.5 dm., giving an average length of only about 9 mm.

53. *Coreopsis Chippii* M. B. Moss, Kew Bull. 196. 1929.

Suffrutex, 1 m. altus, caulibus (glabratibus) et ramulis (puberulis) subteretibus, internodiis 5–12 mm. longis. Folia opposita, tenuiter

petiolata petiolis circ. 4–6 mm. longis, petiolo adjecto circ. 1.5–2 cm. longa, 1–2-pinnatisecta, segmentis glabris vel glabriusculis, acriter apiculatis, crassiusculis, tantum circ. 0.2–0.4 mm. latis. Capitula subcorymbosa, tenuiter pedicellata pedicellis valde puberulis et circ. 1–2.5 cm. longis, radiata, pansa ad anthesin \pm 2.3 cm. lata et 5–6.5 mm. alta, demum subglobosa et circ. 1 cm. diametro. Involucri hispidi bractee exteriores 10–20, lineares, obtusae vel etiam subtruncatae, 4–5 mm. longae et circ. 0.5 mm. latae, saepe patentis; interiores late lanceolatae paulo longiores. Flores ligulati (probabiliter circ. 8), flavi, ligula anguste obovati, apice 3-denticulati, circ. 1 cm. longi. Paleae oblongae, obtusae, glabrae, nitidae, superne atriores, 4.5–5.5 mm. longae. Disci florum stigmata truncata, minute appendiculata. Achaenia valde obcompressa, dorso convexa, anguste obovato-oblonga, nigra, glaberrima, apice truncato exaristata, ad latera crassiusculo-marginata sed non vere alata, circ. 4 mm. longa et 1–1.4 mm. lata.

Type specimen: Collected by *Thomas Ford Chipp*, No. 66, growing in scrub on mountain top, also in forest in ravines, at altitude of 3,125 meters, top of Mount Kineti (Kineti), Imatong Mountains, southern Sudan, February 11, 1929 (Kew).

Distribution: Known only from type locality in southern Sudan. ("The Imatong Mountains, the highest point of which is Mt. Kineti, 10,414 feet, are situated between 4° and 4° 30' N. and 32° 20' and 33° E., just north of the boundary between the Anglo-Sudan and Uganda"; T. F. Chipp, Kew Bull. 177. 1929.)

Specimens examined: *Chipp 66* (type, Kew).

54. *Coreopsis scopulorum* Sherff, Bot. Gaz. 88: 302. 1929.

Frutex +2 dm. altus, glaber, ramosus, ramis foliosissimis, internodiis saepe tantum 3–5 mm. longis. Folia opposita, petiolata petiolis 6–10 mm. longis, petiolo adjecto tantum 1.2–2 cm. longa, plus minusve biternatisecta, segmentis ultimis linearibus, subcarnosis, margine saepe revolutis, apice mucronatis, vix 1 mm. latis. Capitula tenuiter pedunculata pedunculis 3–5 cm. longis ac saepe ad ramorum terminos 3–5-adgregatis, radiata (radiis in typo deficientibus sed ovariis circ. 8 sterilibus repraesentatis), demum circ. 8 mm. alta et 7–10 mm. lata. Involucri bractee exteriores circ. 8, anguste lineares, patenti-reflexae, apice rotundatae vel abrupte cuspidatae, circ. 3 mm. longae, interioribus lanceolatis atque apicem versus reflexis subaequalibus. Paleae perspicuae, late oblongae, apice rotundato-obtusae, achaeniorum corpora moderate superantes.

Disci florum stigmata apice perspicue caudata. Achaenia linearia, obcompressa, exalata, faciebus marginibusque erecto-setosa, atra, singula facie circ. 8-striata, corpore 5–6 mm. longa et 0.7–1 mm. lata, apice erecto-setosa ac perspicue biaristata aristis tenuibus erecto-hispidis circ. 2.5 mm. longis.

Type specimen: Collected by *Edmund Heller*, on cliffs at altitude of 2,130 meters, on summit of Mount Garguez, British East Africa, August 26, 1911 (U.S.).

Distribution: Known only from type locality.

Specimens examined: *Heller*, on cliffs at alt. 2,130 meters, summit of Mount Garguez, British East Africa, August 26, 1911 (type, U.S.).

Apparently nearest *Coreopsis elgonensis* (from which it differs in its longer and petiolate leaves, its shorter external involucre bracts, its aristate achenes, etc.) and *C. Chippii* (from which it differs in its much broader leaf segments, etc.). All three species offer a strong resemblance to certain low, shrubby South American species of *Coreopsis*.

55. *Coreopsis Jacksonii* S. Moore, Journ. Linn. Soc. 35: 347. 1902. Plate 1. *Bidens spathulata* Sherff, Bot. Gaz. 76: 149, pl. 13. 1923. *B. Jacksonii* (S. Moore) Sherff, Bot. Gaz. 81: 45. 1926. Folia plus minusve glabra *C. Jacksonii*. Folia pro parte maxima dense hispida var. β *arthrochaeta*.

Herba procumbens vel adscendens, plus minusve glabra, forsitan annua, caule subsimplici nonnullis nodis radicante, 3.5–5 dm. longo. Folia non manifeste petiolata, 4–8 cm. longa et 1.5–2.5 cm. lata, valde membranacea, spathulato-oblancoolata, apice subobtusata, inferne sensim angustata, integra vel remotissime minimeque denticulata, ciliata, in sicco plus minusve stramineo-viridia. Capitula perpaucata (1–3), pedunculata pedunculis pubescentibus usque ad 6 cm. longis, radiata, pansa ad anthesin circ. 3.5–4.5 cm. lata et 7–9 mm. alta. Involucri bracteae exteriores circ. 6, membranaceae, oblongae vel oblanceolatae, ciliatae, apice orbiculatae, ad anthesin circ. 8–10 mm. longae et 2–3 mm. latae; interiores oblongo-ovatae, apice subacutae, ad anthesin circ. 3.5–4.5 mm. longae. Flores ligulati circ. 6, lutei, ligula elliptico-oblancoolata, apice dentati, 1.5–1.8 cm. longi et 4.5–6.5 mm. lati. Florum tubulosorum stigmata termino anguste elongata. Achaenia subatra vel brunneo-atra, crasso-clavata, plus minusve tumida ac quadrangulata, non manifeste striata, circ. 3.2–3.7 mm. longa et 1.1–1.7 mm. crassa, glabrata, exalata, exaristata sed apice saepe reliquo basali floris hermaphroditi coronata itaque false rostrata.

Type specimen: Collected by *Frederick J. Jackson*, Kikuyu region, British East Africa, 1889 (Brit.).

Distribution: Kikuyu region and northward to Mount Kenya (Kenia), British East Africa.

Specimens examined: *Frederick J. Jackson*, Kikuyu region, 1889 (type, Brit.); *Edgar A. Mearns* 1291, alt. about 3,630 meters, in "giant heath" zone, western slopes of Mount Kenya, British East Africa, September 21–27, 1909 (type of *Bidens spathulata* Sherff, U.S.); *idem* 1722, alt. about 3,000 meters, bamboo zone, western slopes of Mount Kenya, September 28–October 7, 1909 (U.S.).

A species strikingly different from all other species of *Coreopsis* and easily distinguished from other African species by its thin, spatulate leaves. Its habit of rooting at many of the nodes, evidently in response to aqueous conditions of the habitat, is almost as distinctive, being common in only a few species of these two genera.

My examination of the type specimen of *Coreopsis Jacksonii* S. Moore (Brit.) showed that it was merely a tiny, dwarfed specimen (cf. Moore, loc. cit., "unfortunately a mere scrap") of the species described and illustrated by me under the name of *Bidens spathulata*. (The type of *Bidens spathulata*, it will be noted, was collected upon Mount Kenya, British East Africa, while the type of *Coreopsis Jacksonii* was collected in the small Kikuyu area immediately to the southwest.) Because, however, of its very diminutive stature (being only a few centimeters high), it lacked the spatulate type of leaves that so strongly characterizes larger plants. The leaves were more rotund in outline. For these reasons, Moore's description of *Coreopsis Jacksonii* had been, of necessity, so misleading that only a personal study of his type plant could impart an understanding of its true specific status. As to its generic status, its complete lack of mature achenes, as also in the case of the type of *Bidens spathulata*, made it necessary to rely upon general habit, which is somewhat more that of *Bidens* than of *Coreopsis*. The recent finding (1) of the var. *arthrochaeta* of this species and (2) of *Mearns* 1722 of the species proper makes it possible, however, to refer the species definitely to *Coreopsis*.

Coreopsis Jacksonii var. β *arthrochaeta* Sherff, Bot. Gaz. 88: 302. 1929.

A specie foliis pro parte maxima dense hispidis, setis albidis elongatis sensim attenuatis multiloculatis differt.

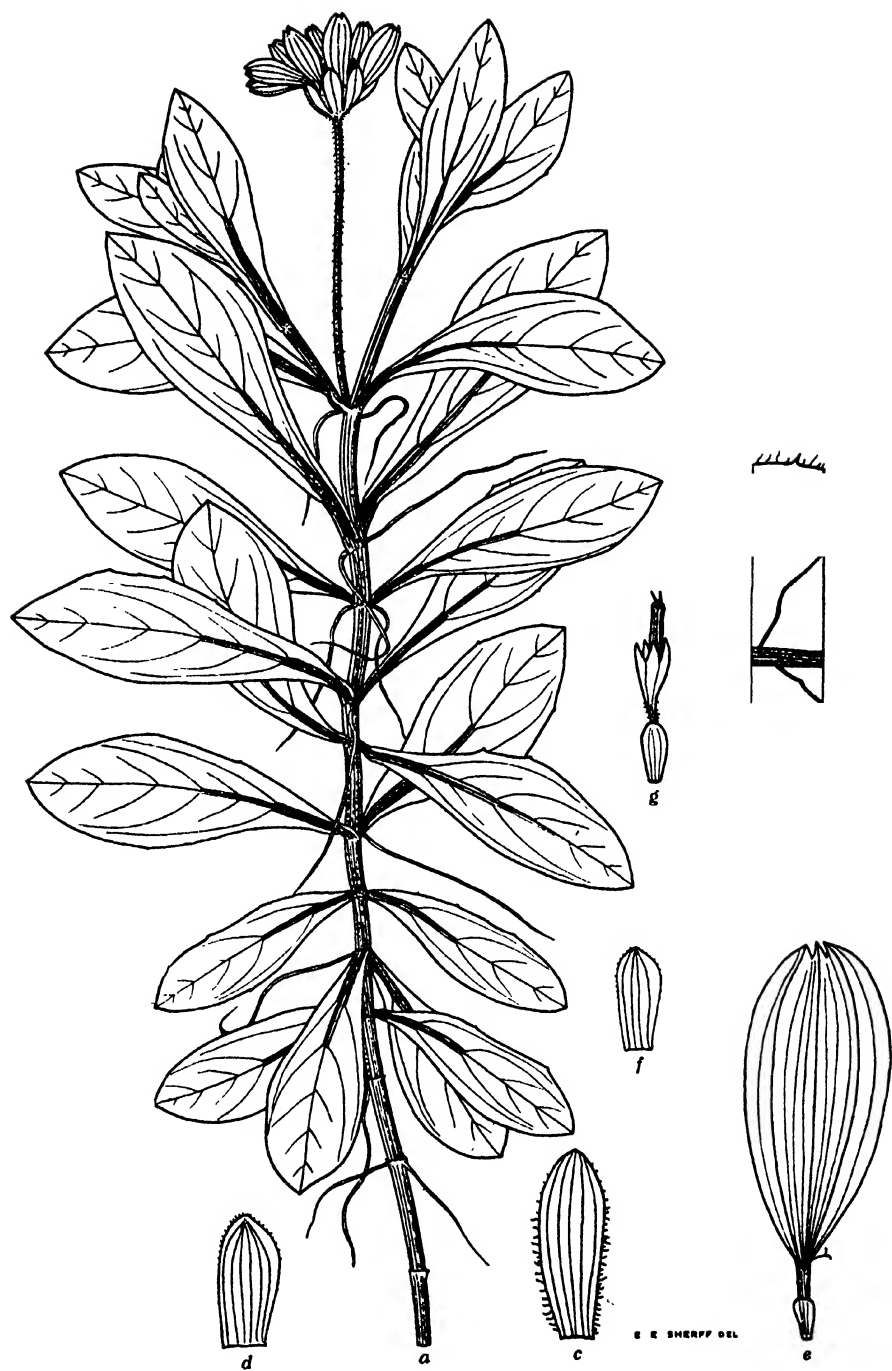


FIG. 1. *Coreopsis Jacksonii* (S. L. Moore) Sherff.

Type specimen: Collected by *R. L. Piemeisel* and *Leonard W. Kephart*, No. 166, at altitude of 3,300 meters, vicinity of Camp Gusisu, Aberdares Mountains, British East Africa, July 29, 1927 (U.S.).

Distribution: Known only from type locality.

Specimens examined: *Piemeisel & Kephart 166* (type, U.S.).

The type material of the var. *arthrochaeta* consisted of at least six small, entire plants and these offer a strikingly unique appearance because of their densely hispid leaves. Since endemism is pronounced among the plants of the Kikuyu region, and since elsewhere even where endemism is relatively unimportant (in the United States) *Coreopsis* displays many forms that are accepted as varieties, it appears worth while to distinguish the *Piemeisel & Kephart* plants as connoting a group of varietal rank.

Explanation of *Fig. 1*.—*Coreopsis Jacksonii* S. L. Moore: *a*, flowering specimen, $\times 0.66$; *b*, portion of leaf enlarged to show ciliation, $\times 2.65$; *c*, exterior involucre bract, $\times 2.65$; *d*, interior involucre bract, $\times 2.65$; *e*, ligulate floret, $\times 2.65$; *f*, palea, $\times 2.65$; *g*, disc floret, $\times 2.65$; all from *Mearns 1291*, type of *Bidens spathulata* Sherff, Herb. U. S.

56. *Coreopsis Negriana* Sherff, Bot. Gaz. 90: 397. 1930.

Herba annua, erecta, ± 5 dm. alta, caule gracili, glabro vel ad summam subhispidio, viridi-stramineo. Folia opposita petiolata petiolis usque ad 12 mm. longis saepe tenuissimis petiolo adjecto ± 5 cm. longa, 1-2-pinnatisecta, segmentis principalibus lineari-oblongis, membranaceis, supra infraque glabris, marginibus ciliatis, acriter serratis dentibus interdum in setas elongatas desinentibus. Capitula graciliter pedunculata pedunculis moderate hispidis usque ad 14 cm. longis, radiata, pansa ad anthesin 2-2.5 cm. lata et circ. 6-7 mm. alta. Involucri hispidi bracteae subaequales exteriores circ. 8, lineari-spathulatae, acriter indurato-apiculatae, 3-4 mm. longae; interiores oblongo-ovatae, apicaliter saepe acutae. Flores ligulati circ. 8, flavi, ligula lineari-elliptici, apice obtuso obscure denticulati, circ. 1 cm. longi et circ. 2-3 mm. lati. Paleae nitido-hyalinae, lineari-oblongae vel lineari-lanceolatae, demum conduplicatae ac achaenium amplectentes, maturae circ. 6 mm. longae. Disci florum stigmata subito capilliformi-caudata. Achaenia lineari-oblonga, valde obcompressa, glabra, corpore nigro estriato vel obscurissime multistriato tantum 3-4 mm. longa et circ. 1 mm. lata, marginibus anguste alata alis brunneis glabrisque, apice exaristata ac glabra.

Type specimen: Collected by *Giovanni Negri*, No. 915 bis, at altitude of 1,500 meters, Arussi Galla, June 30, 1909 (Flor.).

Distribution: Known only from type locality in Arussi Galla, Gallaland.

Specimens examined: *Negri 915 bis* (type, Flor.).

A species close to *C. pachyloma* O. & H., from which it differs, however, in its smaller capitula, also its smaller achenes which are obcompressed, winged, and glabrous. The general habit is deceptively like that of *Bidens setigera* (*Coreopsis setigera* Schz. Bip.), some of the foliar teeth even having the setiform extensions so notable in that species. But *B. setigera*'s achenes are distinctly striate, upwardly setose upon the faces and edges, entirely exalate, and (in the species proper) at the apex conspicuously slender-aristate.

57. *Coreopsis camporum* Hutch. Kew Bull. 381. 1921.

Herba perennis, erecta, caule 1-1.25 m. alto, basim versus dense foliato internodiis brevibus, glabro, simplici vel superne corymboso-ramoso. Folia opposita, petiolata petiolis anguste marginatis circ. 1-2.5 cm. longis, petiolo adjecto 0.5-1.5 dm. longa, simpliciter vel rarius bipinnata, sicca laete viridia, segmentis linearibus vel lineari-lanceolatis, acutis, revolutis, unaquaque facierum glabris, margine spinuloso-setulosis et saepe sparsim dentatis (dentibus e basibus triangularibus et longe setigeris), usque ad 9.5 cm. longis et 7 mm. latis. Capitula pauca vel numerosa, subcorymbosa, breviter tenuiterque pedunculata pedunculis superne puberulis, radiata, pansa ad anthesin 2-3 cm. lata et 6-9 mm. alta. Involucri bracteae exteriores circ. 12, patulae, lineares, acutae, tergo glabratae sed marginibus setulosae, 0.8-1.5 cm. longae; interiores adscendentes, oblongo-lanceolatae, obtuse acuminatae, circ. 6 mm. longae et 2 mm. latae, crebre resinoso-striatae. Flores ligulati circ. 10, auran- tiaci, fertiles, ligula oblongo-elliptici, apice breviter bilobati, circ. 1.2-1.5 cm. longi et circ. 4 mm. lati, circ. 9-nervi. Paleae oblongo-ob lanceolatae, minute mucronatae, circ. 5.5 mm. longae et circ. 1.5 mm. latae. Achaenia immatura lineari-oblonga, complanata, omnino brunnea, alata, ciliato-pubescentia, corpore 4-5 mm. longa, biaristata aristis rigidis circ. 2.5 mm. longis.

Type specimen: Collected by *H. V. Lely*, No. 383, at altitude of 1,380 meters on plains between Hephham and Ropp, northern Nigeria, July 5, 1921 (Kew).

Distribution: Northern Nigeria.

Specimens examined: *Lely 383* (type, Kew); *idem 449*, alt. 1,380 meters, Ropp, July 19, 1921 (Kew); *J. Dent Young 153*, alt. 900–1,350 meters, waste land, Vom, Bauchi Plateau, 1922 (Kew).

58. *Coreopsis Ellenbeckii* O. Hoffm. Bot. Jahrb. 38: 205. 1906.

Herba perennis, glaberrima. Folia (caulium juvenilium) petiolata petiolis alato-marginatis basi connatis 5–10 mm. longis, petiolo adjecto 3–5 cm. longa, bipinnatifidita, rhachi late linearia ac alata segmentis linearibus acutis apicaliter callosis 1–2 mm. latis. Capitula (tantum unicum terminantem ramum juvenilem vidi) tenuiter pedunculata pedunculo glabro fere 3.5 cm. longo, radiata, pansa ad anthesin (bracteis patentibus inclusis) circ. 4.5 cm. lata et circ. 11 mm. alta. Involucris bracteae exteriores circ. 5, perspicue foliaceae, trifidae, glaberrimae, apicaliter callosae, 1.7–2.4 cm. longae, lobo terminali multo majore ± 1.5 mm. lato et usque ad 1.5 cm. longo; interiores oblongae membranaceae brunneae margine angusto luteolo cinctae circ. 7–8 mm. longae. Flores ligulati 8, flavi, ligula elliptico-oblongi, multistriati, ± 1.8 cm. longi et ± 4 mm. lati, apice acriter 3-dentati dente mediano acriter bidenticulato. Disci florum stigmata terminaliter caudata. Achaenia matura non visa; ovariis obcompressis, margine hyalino cinctis faciebus glaberrimis sed marginibus dense erecto-ciliatis ciliis superioribus elongato-sericeis, biaristatis aristis corolla brevioribus rigide erecto-hispidis.

Type specimen: Collected by *Dr. Ellenbeck* (Exped. *Baron von Erlanger*), No. 529, at altitude of 2,500 meters in meadows on mountain slopes, on the Gara Mulata, Harar, State of Harar, eastern Abyssinia, March 21, 1900 (Berl.).

Distribution: Known only from type locality at Harar, eastern Abyssinia.

Specimens examined: *Ellenbeck 529* (type, Berl.).

Founded upon the lone type specimen, which consists of four leafy stems 13–20 cm. long, one of them ending in a flowering head. These come from the base of an old stem some 6 mm. thick which had died away. The juvenile or second-growth nature of the parts relied upon for the technical description leave some doubt as to the degree to which the characters recorded are truly representative.

59. *Coreopsis lineariloba* O. Hoffm. Bot. Jahrb. 30: 430. 1901.

Herba perennis, ramosa, ramis glabris, erectis, internodiis saepius 9–13 cm. longis. Folia opposita petiolata petiolis planis ac anguste marginatis usque ad 3 cm. longis, petiolo adjecto usque ad 12 cm.

longa, bipinnatipartita segmentis rhachi subsimilibus saepius 1–1.5 cm. longis et plerumque 1.2–2.5 mm. latis linearibus apice acuto mucronatis glabris etiam eciliatis. Capitula mediocria tenuiter pedicellata pedicellis glabris cymam laxam bracteis linearibus munitam formantia, radiata, pansa ad anthesin circ. 2 cm. lata et 7–9 mm. alta. Involucri bractee exteriores 10–12, lineares, apice obtusae acutaeve, basi ciliatae ceterum glabrae, 4–6 mm. longae; interiores ovatae, acuminatae, apice tomentellae ceterum glabrae, saepe paulo breviores. Flores ligulati circ. 8–10, flavi, ligula ovati, apice subintegri, circ. 1 cm. longi. Paleae late oblongae, apice subacutae. Disci florum stigmata terminaliter caudato-attenuata. Achaenia matura ignota; ovariis obcompressis glabris vel saepius margine et inter aristas pappi ciliatis, pappi aristis 2 (raro 3) subulatis tubum corollae superantibus antrorsum longe pectinato-ciliatis.

Type specimen: Collected by W. Goetze, No. 790, growing 1 meter high on red laterite at altitude of 1,900 meters on an undulating plateau, Liangira, Ubona, southwesternmost German East Africa, March 24, 1899 (Berl.).

Distribution: Known only from type locality in German East Africa.

Specimens examined: *Goetze 790* (type, Berl.).

60. *Coreopsis Schimperi* O. Hoffm. Bot. Jahrb. 38: 205. 1906. *Microlecanne abyssinica* f. *elongata* Vatke, Linnaea 39: 497. 1875.

Herba perennis, glaberrima, e radice fasciculata radiculis ± 1 dm. longis et circ. 2.5 mm. crassis, erecta vel basim versus procumbens et nodis radicans, caule gracili subsimplici 6–9 dm. alto. Folia opposita petiolata petiolis brevibus basaliter dilatatis connatisque tantum circ. 2–7 mm. longis, petiolo adjecto usque ad 5.5 cm. longa, quam internodia multo breviora, circumambitu late deltoideo-ovata, 2–3-pinnatipartita segmentis linearibus acutis apice callosis margine raro spinuloso-ciliatis circ. 1 (raro 2) mm. latis. Capitula in corymbo amplo laxiusculo foliis reductis bracteato disposita pedicellis gracilibus spinuloso-hispidis vel glabratis apice paululo dilatatis usque ad 4.5 cm. longis, radiata, pansa ad anthesin 2–2.8 cm. lata et tantum circ. 5 mm. alta. Involucri bractee exteriores circ. 8 (raro usque ad 10), anguste lineares, subherbaceae, glaberrimae, subacriter calloso-apiculatae, 3–3.5 mm. longae et circ. 0.4 mm. latae; interiores late ellipticae, medio membranaceae purpurascentes pilos breves crassos gerentes, margine hyalina glaberrimae, apice

in acumen breve obtusum productae, quam exteriores interdum paulo longiores. Flores ligulati circ. 8, flavi, ligula oblongo-elliptici, apice plerumque 3-lobulati, 1–1.5 cm. longi et 4–7 mm. lati. Paleae hyalinae, nitidae, late lineari-oblongae, apice subobtusae, lineis 3 duplicibus percursae circ. 4–5 mm. longae. Disci florum stigmata minima terminaliter caudato-angustata. Achaenia leviter obcompressa, nitida, crasso-clavata, glaberrima, aegre striata, exalata, exaristata, circ. 2.5 mm. longa et fere 1 mm. lata.

Type specimen: Collected by *Wilhelm Schimper*, No. 1386, in meadows at altitude of 2,460 meters, Gaffat, Abyssinia, October 15, 1863 (Berl., 2 sheets).

Distribution: Abyssinia.

Specimens examined: *Rohlf's & Stecker*, Godofelassi, Abyssinia, January 7, 1881 (Berl.); *Schimper 1386* (2 type sheets, Berl.; type and cotype of *Microlecanium abyssinica* f. *elongata* Vatke).

The type material had been incorrectly ranked by Vatke as a forma under *Microlecanium abyssinica* (Schz. Bip.) B. & H. f. (*Bidens setigera* [Schz. Bip.] Sherff). As O. Hoffmann (loc. cit.) has shown, the two are very different.

61. *Coreopsis Prestinariaeformis* Vatke, Linnaea 39: 499. 1875. *C. Pristinariaeformis* Vatke ex O. & H. in Oliv. Fl. Trop. Afr. 3: 387. 1877 (sphalm). *C. heterocarpa* Chiov., Ann. Bot. Roma 9: 75. 1911 (pro maxima parte; cf. etiam var. *incisa* infra).

Folia simplicia vel pinnatim 3–5-tripartita.

C. Prestinariaeformis sensu stricto.

Folia bipinnatisecta..... var. *β incisa*.

Herba annua, undique plus minusve pilis crassis flexuosis obsita, caule simplex vel quidem e basi valde ramosa, 1–6 dm. alta. Folia sessilia vel breviter petiolata, 2.5–7 cm. longa, circumambitu ovato-lanceolata vel deltoideo-cordata, sicca subvalde membranacea, simplicia vel plurimum subincise 3- vel etiam sub 5-partita, segmentis varie ovatis vel rhomboideo-ovatis et margine dentatis vel incisitis lateralibus multo minoribus. Capitula saepius numerosa vel numerosissima, tenuiter pedicellata pedicellis ante et per anthesin erectis postea hamato-recurvis et tunc cernua, radiata, pansa ad anthesin circ. 2.8–3.3 cm. lata et circ. 1–1.2 cm. alta. Involucri bractae aequilongae, exteriores 10–12, patulae, lineares vel lineari-spathulatae, apice obtusae vel acutiusculae, glabrae, circ. 4–6 mm. longae; interiores ovato-lanceolatae vel oblongo-ovatae, rufidulae, in dorso notatae ibique pilis longis crassis flexuosis flavescentibus onustae.

Flores ligulati 6 vel 7, aurei, ligula varie elliptico-obovati oblongo-elliptici vel late spathulato-oblongeolati, apice denticulati, superne in centro vel parum subtus macula aurantiaca rotunda elliptica vel lunulata praediti, 1.5–2.5 cm. longi et usque ad 8 mm. lati. Paleae glaberrimae, supra rufae. Achaenia valde obcompressa apice erecto-setosa in 3 vel 4 seriebus exteriora corpore ± 8 mm. longa et ± 2 mm. lata, marginibus latissime alata alis apice truncatis et setoso-ciliatis; centralia lineari-oblonga exalata setoso-ciliata corpore ± 12 mm. longa et ± 2.5 –3 mm. lata; omnia cum pappo duobus aristis linearibus vel demum lanceolato-subulatis acutissimis achaenii corpori aequilongis vel quidem tantum 3–4 mm. longis antrorsum hispidis formato.

Type specimen: Collected by *Wilhelm Schimper*, No. 1173, at altitude of 2,460 meters in meadows at Gaffat, Abyssinia, September 25, 1863 (Berl., 2 sheets).

Distribution: Abyssinia.

Specimens examined: *Emilio Chiovenda* 970, Debarek, District of Semien, Province of Amhara, Abyssinia, July 11, 1909 (Flor.); *idem* 1148, Gondar, District of Dembià (Dembea), Province of Amhara, Abyssinia, July 30, 1909 (Flor.); *idem* 1869, vicinity of Gondar, September 8, 1909 (Flor.); *idem* 1953 et 1954, District of Dembià, September 8, 1909 (Flor.); *G. W. Grabham*, Bahadur Gorges, on Lake Tana (L. Tsana), Abyssinia (Kew); *Plowden*, Abyssinia (Kew); *Schimper* 1173 (type, Berl., 2 sheets; cotype, Kew).

An important plant in the festal celebrations of some of the Abyssinians (cf. Chiovenda, loc. cit.).

Chiovenda (loc. cit.) cited seven of his own specimens as a basis for his *Coreopsis heterocarpa*: Nos. 1090, 1148, 1869, 1953, 1954, 1955, and 970 (in the order here given). His No. 1090 is my var. *incisa* (infra). The others, unless 1955 (*which alone* I have been unable to find at Florence), are *C. Prestinariaeformis* proper. Chiovenda's description as drawn fits primarily *C. Prestinariaeformis*.

***Coreopsis Prestinariaeformis* var. β *incisa* Sherff, Bot. Gaz. 90: 387. 1930. *C. heterocarpa* Chiov. Ann. Bot. Roma 9: 75. 1911 (pro minima parte).**

A specie foliis acriter et perspicue bipinnatisectis segmentis principalibus oblongo-lanceolatis differt.

Type specimen: Collected by *Dr. Ellenbeck* (Expedition of *Baron von Erlanger*), No. 1436, growing 1 meter high at altitude of 2,600 meters, Djafa, Arussi, Galla, Gallaland, July 21, 1900 (Berl.).

Distribution: Northern Abyssinia southward into Gallaland.

Specimens examined: *Emilio Chiovenda* 1090, very common, Gondar, District of Dembià (Dembea), Province of Amhara, Abyssinia, July 26, 1909 (Flor.); *Ellenbeck* 1436 (type, Berl.).

62. *Coreopsis Barteri* O. & H. in Oliver, Fl. Trop. Afr. 3: 390. 1877. *C. badia* Sherff, Bot. Gaz. 76: 90. 1923.

Herba glabra, adscendens, ramosa ramis teretibus striatis, 3–10 dm. alta. Folia opposita vel rarius trina, sessilia vel subsessilia, membranacea, 1.5–5 cm. longa, nunc cuneato-oblancheolata et apicem versus subremote acriterque serrata, nunc irregulariter trilobata lobis lineari-oblongis. Capitula ramos singillatim terminantia, tenuiter pedunculata pedunculis 3–9 cm. longis, radiata, pansa ad anthesin 2–2.6 cm. lata et 7–9 mm. alta. Involucri glabri bracteae subaequales, exteriores 7–10, lineari-oblongae, acriter apiculatae, demum 5–7 mm. longae et 0.6–0.8 mm. latae; interiores oblongo-lanceolatae circ. 2.2–2.6 mm. latae. Flores ligulati circ. 8, lutei, ligula lineari-elliptici, apice obscure denticulati, 7–10 mm. longi et 3–4 mm. lati. Paleae late oblongo-lineares, apice obtusissimae, circ. 7 mm. longae. Disci florum stigmata parce incrassata, hispida, caudata. Achaenia obcompressa, atra, corpore tenuiter vel sublata linearia, 5–9 mm. longa et 0.9–1.5 mm. lata, faciebus venuste adpressequae erecto-pilosa, marginibus (saltem achaenia exteriora) late et perspicue membranaceo-alata alis erecto-ciliatis, apice erecto-hispido biaristata aristis tenuibus erecto-hispidis 2–4 mm. longis.—Involucri bracteae interiores, paleae, achaeniorum alae badiae vel parce purpureo-badiae.

Type specimen: Collected by *Charles Barter*, No. 870, chiefly in cultivated ground, Borgu, Upper Guinea (Kew).

Distribution: Northwestern Africa, from Kamerun west to Togo and northward to Borgu.

Specimens examined: *W. B. Baikie*, on the Niger River, West Tropical Africa (Kew); *Barter*, Borgu, Upper Guinea (type, Kew); *Mission Gironcourt* 256, on mountains of gneiss, Togo, 1908–1909 (type of *Coreopsis badia* Sherff, Berl.); *C. Ledermann* 1855, alt. 1,800 meters, swampy place on shore of stream, Babadju, Kamerun, December 15, 1908 (Berl., 2 sheets).

63. *Coreopsis monticola* (Hook. f.) O. & H. in Oliver, Fl. Trop. Afr. 3: 390. 1877. *Verbesina (Prestinaria) monticola* Hook. f. Journ. Linn. Soc. 7: 200. 1864.

Caulis demum plerumque glabratus.....*C. monticola*.

Caulis laxo vel subdense pilosus.....var. β *pilosa*.

Herba perennis, erecta, rigida, subsimplex, 3–11 dm. alta, caule vix subtetragono, superne circ. 2.5–3.5 mm. crasso, demum plerumque glabrato. Folia opposita petiolata petiolis planis submarginatis 0.6–2 cm. longis, petiolo adjecto circ. 4–5 cm. longa, circumambitu ovata, subcoriacea, margine et facie inferiore aegre hispida vel mox glabrata, trisecta, foliolis 3–5-sectis, segmentis ovatis vel lanceolatis vel anguste oblongis, infra pallidioribus, dentibus acriter apiculatis. Capitula corymbosa, pedunculata pedunculis tenuibus 2–8 cm. longis, radiata, pansa ad anthesin 4–5.5 cm. lata et 8–10 mm. alta. Involucri glabri bractee exteriores 8 vel 9, lineares, acriter indurato-apiculatae, 8–9 mm. longae, quam interiores oblongo-ovatae nitidae rubro-brunneae vix longiores. Flores ligulati circ. 8 vel 9, aurantiaci, ligula lineares, circ. 13–15-nervii, apice minute sed acriter denticulati, circ. 1.8–2.2 cm. longi et 4.5–6 mm. lati. Paleae lineari-oblongae, circ. 5-nerviae, apice obtusissimae, circ. 9 mm. longae et 2 mm. latae. Disci florum stigmata lanceolato-caudata. Achaenia oblonga, obcompressa, nigra, exalata vel subanguste alata alis stramineis, facie ventrali marginibusque sursum setosa, corpore 3–5.2 mm. longa et alis inclusis 1.1–2 mm. lata, apice corona setarum erectarum coronata ac biaristata aristis tenuibus stramineis sursum hispidis circ. 2.5–3 mm. longis.

Type specimen: Collected by *Gustav Mann*, No. 1922, at altitude of 1,800–2,100 meters, Kamerun (Cameroon) Mountains, Kamerun, November 6, 1862 (Kew).

Distribution: Kamerun.

Specimens examined: *W. Kalbreyer* 125, alt. 2,100–2,550 meters, open plain, dry places, Kamerun Mountain, Kamerun (Berl.); *Luckhardt* 626, Kamerun, December, 1912 (Berl.); *Mann* 1922 (type, Kew; cotypes, Berl.; Gray); *F. Mildbraed* 3392, "half-shrub" growing 7.5–10 dm. high, furrows between lava streams, lower Fuko Plateau, Great Kamerun Mountain, Kamerun, June, 1908 (Berl.); *Mintz* 40, alt. 2,400–2,800 meters, Great Kamerun Mountain, October 29, 1910 (Berl.); *Preuss*, alt. 2,000–2,800 meters, Kamerun, 1891 (Berl.); *idem* 689, Buea, Kamerun, 1891 (Berl., 3 sheets; Gray); *Gust. Simon* 3, on lava fields, eodem loco, December 26, 1909 (Berl.).

Coreopsis monticola var. β *pilosa* Hutch. & Dalz. Fl. West Trop. Afr. 2: 143. 1931.

Herba usque ad 3 m. alta, caulibus ramisque laxae vel subdense pilosis pilis multiloculatis, foliis membranaceis, petiolo adjecto 6–10 cm. longis, superne hispidis; involucri bracteis exterioribus oblongo-linearibus vel lineari-lanceolatis 6–14 mm. longis et 1.5–3 mm. latis; interioribus tergo hispidis.

Type specimen: Collected by *Dr. Dunlap*, No. 204, growing up to 10 feet high in ravine above timber line at altitude of about 2,100 meters, Kamerun Mountain, Kamerun, January 17, 1926 (Kew).

Distribution: Kamerun.

Specimens examined: *Dunlap 204* (type, Kew); *F. W. H. Migeod 211*, grassland, alt. 2,250 meters, Kamerun Mountains, November 17, 1927 (Kew).

64. *Coreopsis oblonga* Sherff, Bot. Gaz. 76: 80, pl. 7. 1923. Fig. 2.

Herba erecta, verisimiliter perennis ac 6–12 dm. alta; caule obtuse tetragono, atro, apicem versus pubescenti, alibi glabro. Folia petiolata petiolis hispido-ciliatis vel brevibus (usque ad 1.5 cm. longis) latisque vel longioribus (usque ad 3 cm.) et parce angustis, petiolo adjecto 6–7.5 cm. longa, rigida et subcarnosa, pinnata, foliolis acriter dentatis dentibus callosio-apiculatis, subprofunde incisis sinibus angustis vel foliolis lateralibus infimis etiam tripartitis, breviter hispido-ciliatis, setis acribus sparsissime vestitis, terminali oblongo-lanceolato, lateralibus oblongo-ovatis. Capitula pauca, breviter pedunculata pedunculis subrobustis ac hic illic foliolo-bracteatis usque ad 6 cm. longis, radiata, pansa ad anthesin 2.5–3 cm. lata et 9–11 cm. alta. Involucrum setis validis acribusque hispidum; bracteis exterioribus 6–9, late lineari-spathulatis, apicem versus glabratissimis, apice subobtusis, 8–11 mm. longis, eis capitulorum juniorum discum manifeste superantibus; interioribus oblongo-oblanceolatis vel oblongo-obovatis, apicem versus constricta, exterioribus demum subaequalibus. Flores ligulati \pm 7, aurantiaci, ligula elliptico-lanceolata, apice late obtusi et integri denticulati, circ. 15 striis percurti, tubo adjecto 1.5–2.4 cm. longi, tubo circ. 5 mm. longo. Paleae lineari-oblongae. Flores tubulosi limbo aurantiaci, infra pilosi (ad medium etiam longe hirsuti), supra perpaucis pilis interdum conspersi; stylorum ramis terminaliter elongato-attenuatis. Achaenia matura ignota. Ovaria subnigra, oblongo-cuneata, alata, plana, faciebus glabra, corpore 2–3 mm. longa et 0.7–1 mm. lata, apice arrecte setosa et longe biaristata; aristis acribus, supra et ad medium glabris, basim versus setulis arrectis 1–3 sparsim munitis, 2–2.5 mm. longis.

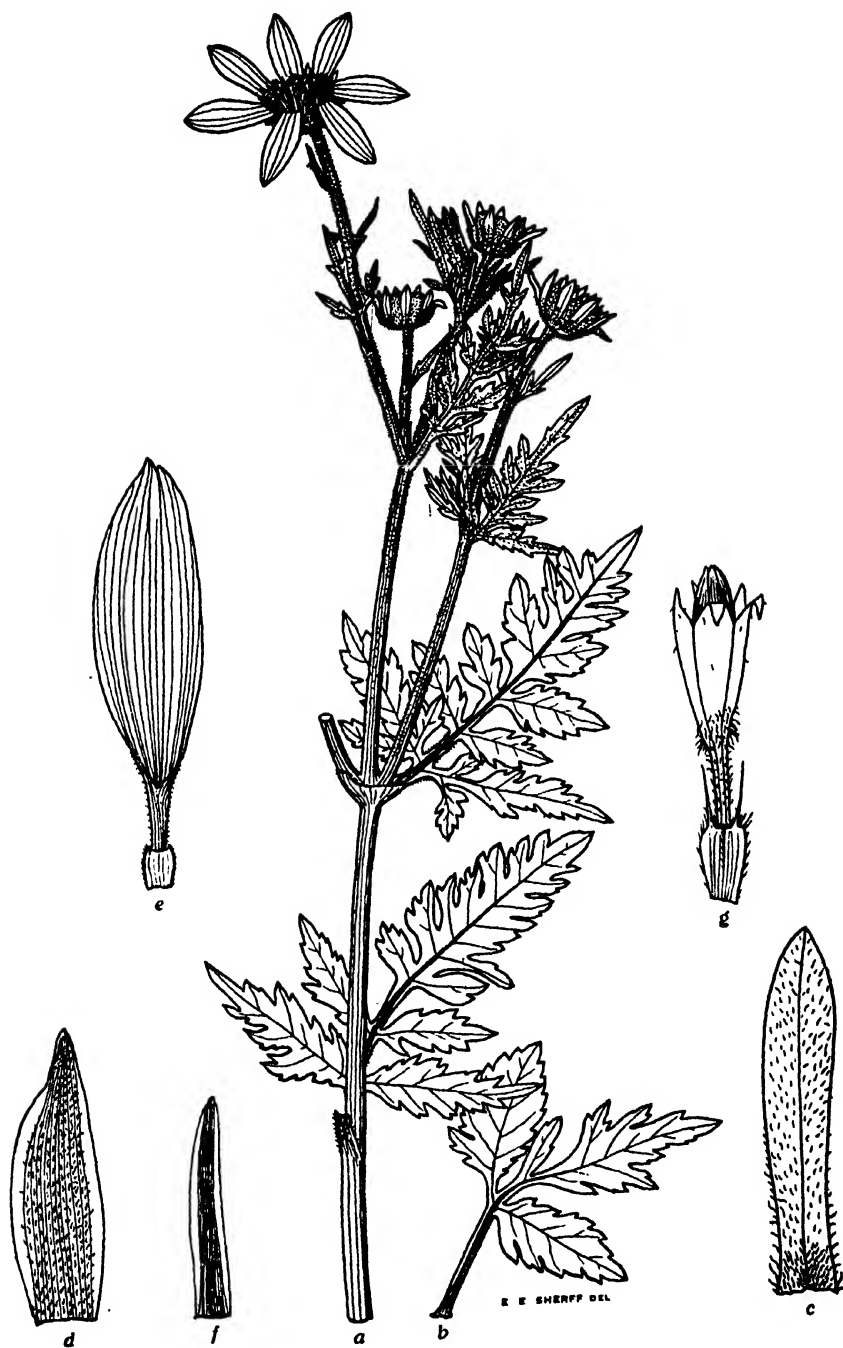


FIG. 2. *Coreopsis oblonga* Sherff.

Type specimen: Collected by *Alex. Carson*, No. 106, Lake Tanganyika, East Equatorial Africa, September, 1893 (Kew).

Distribution: Known only from type locality in East Equatorial Africa.

Specimens examined: *Carson 106* (type, Kew).

A species approaching *Coreopsis pinnatipartita* O. Hoffm., *Bidens Grantii* (Oliv.) Sherff, and *B. Holstii* (O. Hoffm.) Sherff. The hairy, aristate ovaries distinguish it easily from *C. pinnatipartita*, while the definite wings of the ovaries distinguish it from *B. Grantii* and *B. Holstii*.

Explanation of *Fig. 2*.—*Coreopsis oblonga* Sherff: *a*, main portion of flowering specimen, $\times 0.72$; *b*, lower leaf from *a*, $\times 0.72$; *c*, exterior involucre bract, $\times 4.33$; *d*, interior involucre bract, $\times 4.33$; *e*, ligulate floret, $\times 2.16$; *f*, palea, $\times 4.33$; *g*, disc floret with achene immature, $\times 4.33$; all from type, Herb. Kew.

65. *Coreopsis pinnatipartita* O. Hoffm. Bot. Jahrb. 30: 432. 1901.

Fruticosa, perennis, erecta, 1–3 m. alta, ramis erectis, tomentellis, junioribus foliatis. Folia opposita petiolata petiolis anguste marginatis usque ad 3 cm. longis, petiolo adjecto 9–16 cm. longa, pinnatipartita, circumambitu ovata, segmentis ovatis vel lanceolatis, acutis vel obtusis, irregulariter pinnatilobis vel plus minusve profunde serratis, coriaceis, supra scaberulis subtus tomentellis. Capitula in corymbum oligocephalum terminalem congesta, breviter subvaldeque pedicellata pedicellis tomentellis, radiata, pansa ad anthesin 5–6.5 cm. lata. Involucris bracteae aequilongae, ovatae, obtusae, dorso tomentosae, mox reflexae, 8–15 mm. longae, exteriores circ. 8–10, plus minusve biseriales. Flores ligulati circ. 10–12, flavi, ligula elliptici vel elliptico-oblongi, apice plerumque acriter denticulati, circ. 3 cm. longi et circ. 6–9 mm. lati. Paleae perspicue 3-pluri-lineatae lineis brunneis vel brunneo-purpurascensibus, apice obtusae, achaenia multo superantes. Disci florum stigmata terminaliter attenuato-oblongata. Achaenia lineari-oblonga, valde obcompressa, glaberrima, nigra vel subbrunneo-nigra, faciebus multistriata, alata alis margine exteriori stramineis ac crassiusculis, 5–6.5 mm. longa et 1.5–1.8 mm. lata, apice exaristato calloso-indurata.

Type specimen: Collected by *W. Goetze*, No. 1041, at altitude of 2,300 meters on slopes of Poroto Mountain, southwesternmost German East Africa, June 17, 1899 (Berl., 2 sheets).

Distribution: Nyassaland to German East Africa.

Specimens examined: *J. Buchanan 380*, Nyassaland, 1891 (Berl.); *A. Engler 1266*, growing 1 meter high at alt. 2,000–2,400 meters, in high mountain shrub and eagle-fern formation, "Magamba oberhalb Kwai," West Usambara, German East Africa, October 4, 1902 (Berl.); *Goetze 1041* (2 type sheets, Berl.); *Ad. Stolz 1306*, growing 3 meters high at alt. 1,450 meters, Kyimbila, Nyassaland, May 23, 1912 (Berl., 2 sheets); *A. Whyte*, alt. 1,200–1,800 meters, Mount Zomba, Nyassaland, December, 1896 (Berl.).

66. *Coreopsis Whytei* S. L. Moore, Journ. Linn. Soc. 35: 348. 1902.

Herba verisimiliter perennis elataque, caule erecto subtereti vel obtuse angulato pubescenti mox glabrato, ad nodos tumido. Folia opposita, principalia petiolata petiolis saepius 2–3 cm. longis petiolo adjecto ± 8 –10 cm. longa, pinnatifida segmentis ovatis acutis dentato-lobulatis; summa sessilia lanceolata dentato-lobulata integrave; omnia supra sparsissime minutissimeque hispida, subtus pubescentia. Capitula pedunculata pedunculis pubescentibus circ. 2–4 cm. longis, sine dubio radiata, post anthesin fere vel vere 3 cm. lata et ± 1.3 cm. alta. Involucri 3-seriati bracteae extimae et intermediae anguste obovatae obtusae adpresso-erecte hispidae pilis pluriloculatis ± 1.2 cm. longae; intimae oblongae obtusae tenuiores et paulo breviores. Flores ligulati non observati. Paleae oblongo-lanceolatae, obtusissimae, fere 1 cm. longae. Achaenia valde obcompressa, subcuneate lineari-oblonga, angustissime alata, brunneo-nigra, glabra, faciebus striata, apice incrassato exaristata, circ. 6–7 mm. longa et circ. 2 mm. lata.

Type specimen: Collected by *Alexander Whyte*, No. 35, on Mount Milanji (Mount Mlange), southernmost Nyassaland, October, 1891 (Brit.).

Distribution: Known only from type locality in southernmost Nyassaland.

Specimens examined: *Whyte 35* (type, Brit.).

67. *Coreopsis Lupulina* O. Hoffm. Bot. Jahrb. 30: 432. 1901.

Fruticosa, glaberrima, perennis, ramosa, 2–3 m. alta, ramis angulatis terminaliter foliatis. Folia opposita tenuiter petiolata petiolis basaliter connatis usque ad 4 cm. longis, petiolo adjecto 8–12 cm. longa, principalia bipinnatipartita segmentis oblongis serratis vel pinnatifidis apice acutis, superiora simpliciter pinnatipartita.

Capitula saepius in corymbos densos oligocephalos congesta pedicellis brevibus crassisque, radiata, pansa ad anthesin circ. 6 cm. lata et 1.5–1.8 cm. alta. Involucri bracteae demum valde reflexae, exteriores circ. 7–9 crassiusculae oblongo-ovatae apice obtusae circ. 8 mm. longae et 4–6 mm. latae, interiores membranaceae ovatae vel lanceolato-ovatae obtuse acuminatae apice minute fimbriatae circ. 12 mm. longae. Flores ligulati circ. 10, flavi, ligula elliptici, apice circ. 3-denticulati, circ. 2.5 cm. longi et circ. 7–8 mm. lati. Paleae perspicue brunneo-striatae, lineares, obtusae, corollas superantes, exteriores apicem versus demum reflexae. Disci florum stigmata apicaliter elongato-attenuata. Achaenia valde obcompressa, lineari-oblanceolata, omnino atra, marginaliter alata alis quam corpore paulo vel etiam dimidio angustioribus, glabra, faciebus multi-striata 5.5–8 mm. longa et (alis inclusis) 1.7–2.5 mm. lata, apice calloso-marginata et obtuse emarginata.

Type specimen: Collected by *W. Goetze*, No. 1069, at altitude of 2,400 meters on slopes of Beya Mountain, Usafua, southwesternmost German East Africa, June 27, 1899 (Berl., 2 sheets).

Distribution: Known only from type locality in German East Africa.

Specimens examined: *Goetze 1069* (2 type sheets, Berl.).

This species and *C. pinnatipartita* are distinguished from the very similar *Bidens Holstii* (O. Hoffm.) Sherff by their winged achenes.

68. *Coreopsis Neumannii* Sherff, Bot. Gaz. 76: 85. 1923.

Herba ± 1.5 m. alta, caule maximam partem glabro, sulcato, ramoso, internodiis folia facile superantibus. Folia subsessilia vel petiolata petiolis usque ad 1 cm. longis, petiolo adjecto 2–4 cm. longa, plerumque tripartita (inferiora non visa, pinnata ?) foliolis ovatis vel interdum lanceolatis, dentatis vel lobulatis, pubescentibus, dentibus acerrime apiculatis. Capitula corymbosa, 5–11 in unaquaque corymborum, radiata, pansa ad anthesin 2.2–2.7 cm. lata et circ. 6 mm. alta, pedunculis tenuibus plerumque 1–3 cm. longis. Involucrum inconspicue hispidum, bracteis exterioribus circ. 8, flavido-viridibus, lineari-spathulatis, apice acutis, 3–7 mm. longis, quam interioribus lanceolatis paulo brevioribus. Flores ligulati plerumque 8, flavi, ligula elliptico-oblongi, paucistriati, apice integri vel denticulati, circ. 1.2 cm. longi. Paleae oblongo-lanceolatae, saepius acutae, nitidae, achaeniorum aristis superatae. Disci florum stigmata caudato-elongata. Achaenia plumbeo-nigra, circumambitu lineari-

oblonga vel oblanceolata, valde obcompressa, alata alis coloris similis, glabra, corpore 3–4 mm. longa et (alis inclusis) 1–1.5 mm. lata, biaristata aristis brevissime sursumque setosis, circ. 0.5–1 mm. longis.

Type specimen: Collected by *Oscar Neumann* (Exped. to Sidamo, Utadera, and Lake Abbaja), No. 134, at altitude of 2,800 meters, mountain meadows, Gardulla (incorrectly printed Gandulla at time of my original description in 1923), Gallaland (southern Abyssinia), January 14, 1901 (Berl.).

Distribution: Known only from type locality in Abyssinia.

Specimens examined: *Neumann 134* (type, Berl.).

The single type specimen has its heads in corymbose clusters, and thus simulates in habit *Bidens squarrosa* HBK. of tropical America.

69. *Coreopsis Feruloides* Sherff, Bot. Gaz. 80: 375. 1925.

Herba erecta, ramosa, forsitan annua, circ. 7–10 dm. alta, glabra, viridis vel glaucescens, caule subtetragono. Folia sessilia vel subsessilia, 4–8 cm. longa, bipinnata, costa mediana tenui, segmentis linearibus vel anguste lanceolatis, crassiusculis, minute ciliatis, obtusis vel subacutis, plerumque 2–4 mm. latis. Capitula subnumerosa, corymbosa, radiata, pansa ad anthesin 2.5–3 cm. lata et 5–7 mm. alta. Involucri subglabrati bracteae exteriores circ. 8, lineares, apice subobtusae indurataeque, 3–5 mm. longae, interiores lanceolatae circ. 6–7 mm. longae. Flores ligulati circ. 8, flavi, ligula lineari-oblongi, apice obtuso saepius emarginati et aegre circ. 3-denticulati, ± 1.5 cm. longi et circ. 4–5 mm. lati. Paleae lineari-oblongae, longitudinaliter 1–3-nerviae, apice subabrupte acutae, circ. 5.5–7 mm. longae. Disci florum stigmata caudato-attenuata. Achaenia matura minuta, non exserta, atra, valde obcompressa, lineari-oblonga, leviter alata, faciebus subobscurae striata, faciebus marginibusque minute erecto-setosa, corpore tantum 3.5–4 mm. longa et (alis inclusis) parce 1 mm. lata, apice biaristata; aristis tenuissimis, stramineis, setulis minutis erectis numerosis instructis, 1–1.6 mm. longis.

Type specimen: Collected by *E. Battiscombe*, No. 945, at altitude of 2,250–2,400 meters, Kinabop Plateau, Western Aberdare Mountains, British East Africa (Kew).

Distribution: Known only from type locality.

Specimens examined: *Battiscombe 945* (type, Kew).

The general habit simulates very closely that of the Mexican *Bidens serrulata* (Poir.) Desf. (*B. grandiflora* Balb.) and *B. Ferulaefolia*

(Jacq.) DC. The leaves suggest the primary lower lateral portion of the more decomposed leaves of *Ferula glauca* L. Aside from the habit, the tiny achenes are very distinctive, very few African species of *Coreopsis* having such small ones. The achenial wings are of the same color as the body proper, thus easily escaping notice. The species is somewhat unwelcome, as it serves further to weaken the generic distinctions between *Coreopsis* and *Bidens*.

70. *Coreopsis ochracea* O. Hoffm. Bot. Jahrb. 30: 431. 1901; Sherff, Bot. Gaz. 80: 375 and pl. 19. 1925. *C. cosmophylla* Sherff, op. cit. 76: 90 and pl. 9, ff. h-n. 1923. *Bidens ochracea* (O. Hoffm.) Sherff, op. cit. 158. Fig. 3.

Herba perennis, e radice crassa caules interdum complures emit-tens, elatos, parce ramosos, glaberrimos, infra obtuse supra acrius quadrangulatos, 0.8-2 m. altos. Folia pallida petiolata petiolis marginatis usque ad 4.5 cm. longis, petiolo adjecto 4-10 vel saepe etiam usque ad 18 cm. longa, pinnatim 3-5-partita, segmentis sub-crassis, integerrimis vel iterum 3- (rarius 2- vel 4-) partitis, ultimis linearibus, plerumque 1.5-5 mm. latis, apice acutis et mucronatis, supra glaberrimis vel breviter scabro-pilosis, subtus glabris vel saepe ad venam medianam perspicuam sparsim setosis, margine paulo revolutis et breviter scabro-ciliolatis. Capitula ramos terminantia, longe pedunculata pedunculis ebracteatis vel foliis reductis bracteatis et usque ad 3 dm. longis, radiata, pansa ad anthesin 4-8.5 cm. lata et 1-1.5 cm. alta. Involucri bracteae exteriores 8-10, basi saepe pilosae, margine sparsim spinuloso-ciliatae, ceterum plerumque glabrae, lineari-ellipticae vel late lanceolatae, supra basim paulo constrictae, latiores saepe ad apicem in acumen breve obtusum subito angustatae, 8-13 mm. longae; interiores lanceolatae vel ovato-lanceolatae paulo longiores, glabrae vel apice minute pubes-centes, paleas aequantes vel paulo superantes. Flores ligulati plerumque 8, aurantiaci, ligula lineari-elliptici, saepe minute pul-verulento-tomentosi, apice denticulati, 2-3.5 cm. longi. Paleae oblongo-lanceolatae, acutae. Disci florum stigmata terminaliter acuto-subcaudata. Achaenia plana, atra, alata, marginibus erecto-setosa, faciebus glabra, corpore 6-7 mm. longa et 2.5-3.5 mm. lata, apice setosa et biaristata aristis tenuibus, calvis vel sparsissime erecto-setosis, circ. 2 mm. longis.

Type specimen: Collected by W. Goetze, No. 731, at altitude of about 1,700 meters, in thin bush-growth on red laterite on hilly plateaus, Bweni, Uhehe, German East Africa, March 11, 1899 (Berl.).



FIG. 3. *Coreopsis ochracea* O. Hoffm.

Distribution: Northern Nyassaland northward through German East Africa into British East Africa.

Specimens examined: *E. Battiscombe* 83, alt. 1,050–1,200 meters, Muhoroni, British East Africa (Kew; forma foliis plus minusve atypica); *Goetze* 731 (type, Berl.); *Muenzner* 159, Msamvia, Lake Tanganyika District, German East Africa, February 24, 1909 (Berl.; type of *Coreopsis cosmophylla* Sherff); *W. H. Nutt.*, alt. about 1,800 meters, between Lake Tanganyika and Lake Rukwa (L. Rikwa, L. Leopold), 1896 (Kew); *Ad. Stolz* 764, growing 2 meters tall at alt. 600 meters, Kyimbila, Langenburg, German East Africa, June 8, 1911 (Berl.); *idem* (similiter) 764, alt. 600 meters, eodem loco, February 27, 1912 (Del.); *A. Whyte*, northern Nyassaland (Kew).

Hoffmann had not seen ripe fruits of this species ("Reife Früchte fehlen; nach den Fruchtknoten zu erteilen könnten sie geflügelt sein"; Hoffm., loc. cit.). In my own earlier studies it seemed that the specimens of this handsome species of the Nyassa region were of two kinds, differing generically on the basis of the winged character of the achenes. Further specimens have shown, however, that some material is merely more tardy than the rest in displaying achenial wings. As the specimens mature, their achenes become fairly well winged.

Explanation of *Fig. 3*.—*Coreopsis ochracea* O. Hoffm.: *a*, *b*, flowering branch and portion of stem with foliage, $\times 0.58$; *c*, *d*, exterior involucre bracts, $\times 2.33$; *e*, interior involucre bract, $\times 2.33$; *f*, ligulate floret, $\times 1.75$; *g*, palea, $\times 2.33$; *h*, disc corolla, $\times 2.33$; *i*, immature achene, $\times 3.5$; all from type, Herb. Berl.

71. *Coreopsis leptoglossa* Sherff, Bot. Gaz. 76: 88. 1923.

Herba annua, erecta, gracillima, speciminibus observatis parce ramosis, caule tetragono, glabro, 8–10 dm. alto. Folia petiolata, petiolis latis hispidis-ciliatisque usque ad 7 mm. longis vel angustatis glabrisque usque ad 2.5 cm. longis, petiolo adjecto 5–9 cm. longa, glabra, bipinnata, segmentis linearibus, plerumque circ. 1 mm. rarius 1.5–2 mm. latis, apice acutis, margine non ciliatis sed parce revolutis. Capitula tenuiter pedunculata pedunculis 2–10 cm. longis, radiata, pansa ad anthesin 4–5 cm. lata et 6–9 mm. alta. Involucri bractee basi dense aliter leviter hispidae setis acribus, arcuatis, multi(6–12)-loculatis, exteriores 8–10, lineares, apice acutae, margine maximam partem non ciliatae, 5–7 mm. longae et 0.6–0.9 mm. latae, interioribus lanceolatis plerumque breviores. Flores ligulati circ. 8, lutei, leptoglossati, ligula lineari-elliptici, apice integri vel obscure denticulati, 2–2.5 cm. longi et 4–6 mm. lati.

Paleae ignotae. Disci florum stigmata angustato-caudata. Achaenia matura ignota; ovariis obovatis, valde obcompressis, late alatis, supra ad margines et medium erecto-hispidis, biaristatis; aristis erecto-hispidis, 0.4–0.7 mm. longis.

Type specimen: Collected by *T. Kassner*, No. 2871, on mountain slope, Lofuku River, Belgian Congo, May 25, 1908 (Berl.).

Distribution: Known only from type locality in Belgian Congo.

Specimens examined: *Kassner 2871* (type, Berl.).

Has flowering heads resembling those of *Bidens Steppia* (Steetz) Sherff, especially as to involucre.

72. *Coreopsis multiflora* Sherff, Bull. Jard. Bot. Brux. 13: 292. 1935.

Herba erecta, forsitan perennis, probabiliter ± 1 m. alta, caule vel ramis glabris atque acriter tetragonis. Folia principalia petiolata petiolis marginatis ± 1.5 cm. longis, petiolo adjecto ± 1.2 dm. longa, pinnatim circ. 7-partita, foliolis lateralibus oppositis (jugis remotis), inferioribus circ. 5 cm. longis; omnibus membranaceis, circumambitu lanceolatis, cum rhachi confluentes, incise lobulatis (lobulis plus minusve dentatis dentibus acutis) utrinque subsparsim setosis (setis tenuibus) marginibus ciliatis. Capitula pauca ad ramos, pedunculata pedunculis subrobustis inferne glabris superne setis albidis crispis patentibus hispidis 2–6 cm. longis, radiata, ad anthesin cernua et pansa 5–6 cm. lata et ± 1.3 cm. alta. Involucrum basi dense hispidum setis albis crispis acribus pluriloculatis, post anthesin circ. 2–2.3 cm. latum, bracteis subaequalibus; exterioribus linearibus, acutis, crassiusculis, extus glabris vel sparsim hispidis, intus inferne glabris superne densissime hispidis, 8–11 mm. longis; interioribus ovato-oblongis, extus subsparsim hispidis. Flores ligulati 8–10, aurantiaci, ligula lineares vel lineari-oblancoelati, apice minutissime 2–3-denticulati, circ. 2.5 cm. longi et 4–5 mm. lati. Flores tubulosi numerosi (± 125), corollis extrinsecus glabris circ. 5 mm. longis, stylorum ramis longe tenuiterque appendiculatis. *Paleae oblongae, apicem ciliatum obtusumque versus atriores, ad anthesin saepius aristas aequantes. Achaenia non visa. Ovaria plana, ovata, alata, infra medium obsolete supra medium manifeste ciliata setis saepe erectis, faciebus glabrata, corpore circ. 3 mm. longa et circ. 1.5 mm. lata, apice biaristata aristis tenuibus antrorsum hispidulis 1–1.5 mm. longis.*

Type specimen: Collected by *Dom Benoit Thoreau*, No. 2. 11, Plateau of Bianos, Kansenia, Katanga, Belgian Congo, June, 1927 (Bruss.).

Distribution: Katanga, Belgian Congo.

Specimens examined: *Thoreau 2. 11* (type, Bruss.).

73. *Coreopsis bella* Hutch. Kew Bull. 364. 1907.

Herba erecta, verisimiliter perennis, suffruticosa, ± 1 m. alta, ramis parce pubescentibus. Folia petiolata petiolis $\pm 2-3$ cm. longis, petiolo adjecto 7-15 cm. longa, tenere coriacea, circumambitu triangulata vel ovato-triangulata, pinnatipartita, supra breviter subtus longe pubescentia segmentis ovato-lanceolatis acutis plus minusve profunde serratis vel irregulariter pinnatilobis. Capitula tenuiter pedunculata pedunculis pubescentibus $\pm 2-6$ cm. longis, radiata, pansa ad anthesin circ. 5.5-6.5 cm. lata et circ. 1.4-1.7 cm. alta. Involucri bracteae obtusae, circ. 1.3 cm. longae et circ. 4 mm. latae, exteriores oblongae, pilosae; interiores extrinsecus pubescentes. Flores ligulati circ. 12, flavi, ligula oblongo-elliptici, circ. 3 cm. longi, apice subacuti vel obscure dentati, tubo brevi extrinsecus pilosi. Paleae oblongae, glabrae, apice obtusae, apicem versus leviter constrictae, circ. 1 cm. longae et circ. 1.5 mm. latae. Achaenia immatura plana, pilosa, corpore circ. 1 cm. longa, apice biaristata aristis 1.5 cm. longis.

Type specimen: Raised at Kew in 1907 from seeds collected in British East Africa by *R. Diespecker* (Kew).

Distribution: British East Africa.

Specimens examined: Cult. at Kew from seeds collected by *Diespecker* (type, Kew).

Close in general appearance to some African species of *Bidens*. Mature achenes are much to be desired.

74. *Coreopsis Curtisii* Sherff, Bot. Gaz. 96: 146. 1934. *C. Curtisii* Sherff, Bull. Jard. Bot. Brux. 13: 289. 1935 (sphalm).

Herba erecta, verisimiliter perennis, gracilis, forsitan circ. 0.5 m. alta, subsimplex, caule angulato glaberrimo plus minusve purpureo-striato. Folia opposita, tenuiter petiolata petiolis glaberrimis basi connatis usque ad 2 cm. longis, petiolo adjecto usque ad 8 cm. longa, pinnata vel bipinnatisecta, laminae circumambitu triangulato-ovata, segmentis primariis circ. 3 vel 5 pallidis membranaceis lanceolatis acriter dentatis secundum venas marginesque nunc sparsissime nunc subconferte albido-setulosis. Capitula pauca, ± 3 -adgregata et ad rami finem corymbose disposita pedunculis erectis tenuibus glaberrimis 4-8 cm. longis, radiata, pansa ad anthesin circ. 3-3.5 cm. lata et circ. 11-13 mm. alta. Involucri pallidi bracteae supra reflexae,

exteriores circ. 8 vel 9, lineari-oblongae, glabrae vel basi extrema hispidae, apice acutae, ± 4 mm. longae, interioribus ovato-oblongis apice glanduloso-pubescentibus moderate breviores. Flores ligulati circ. 8, aurantiaci, ligula anguste oblongi, apice integri vel subdenticulati, ± 1.5 cm. longi. Paleae lineari-oblongae, apicem versus valde aurantiacae, apice ipso subobtusae. Flores tubulosi extrinsecus glabrae vel secundum corollae superne valde aurantiacae dentes pubescentes et ad tubi apicem sparsim pilosi; stylorum ramis pulcherrime aurantiacis et elongato-appendiculatis. Achaenia matura non visa. Ovaria oblanceolata, plana, nitido-brunnea, longitudinaliter pluristriata, plus minusve alata, marginibus et faciebus saltem supra erecte setosa, corpore ± 4 mm. longa, apice valde erecto-setosa et biaristata aristis glaberrimis ± 1.5 mm. longis.

Type specimen: Collected by *Mrs. Richard C. Curtis* from material cultivated in 1930 from seeds obtained in Angola, Portuguese West Africa (Field).

Distribution: Known only from Angola.

Specimens examined: *Mrs. Curtis*, cult. 1930 (type, Field; cotype, Gray).

A species offering a superficial resemblance in leaf outline and dissection to *C. oligoflora*.

75. *Coreopsis exilis* Sherff, Bull. Jard. Bot. Brux. 13: 288. 1935.

Herba perennis, erecta, gracillima, simplex, 0.5–1.25 m. alta, caule subtetragono glabro infra circ. 3 mm. supra circ. 1.2 mm. crasso. Folia petiolata petiolis tenuibus anguste marginatis glabris basi vix connatis 1.5–3 cm. longis, petiolo adjecto circ. 7–9 cm. longa, pinnatim 3–5-partita, foliolis oblonge lanceolatis (vel superiorum lineari-oblongis), pauciter acidentatis, membranaceis, pallidis, ciliatis, utrinque subsparsum adpresso-hispidis, apice acutis. Capitulum (unicum visum) pedunculatum pedunculo tenui glabrato +11 cm. longo, radiatum, pansum ad anthesin circ. 3.5 cm. latum et +1.5 cm. altum. Involucri bracteae aequilongae, exteriores circ. 8, adpressae, oblonge lineares, basim versus ciliatae ac moderate hispidae supra sparsim adpresso-hispidae vel glabrae, apice acutae, longitudinaliter saltem inferne 3-lineata lineis atris, 9–10 mm. longae; interiores ovato-oblongae, moderate adpresso-hispidae. Flores ligulati circ. 8, aurantiaci, ligula subovati, apice 2–3-denticulati, ± 1.7 cm. longi. Paleae subacutae, glabrae vel aegre pubescentes, ovariorum aristis superatae. Flores tubulosi extrinsecus glabri, supra aurantiaci, corolla circ. 8 mm. longi. Achaenia matura

non visa. Ovaria plana, alata, anguste cuneato-obovata, supra marginibus faciebusque erecto-setosa, corpore circ. 5.5 mm. longa, biaristata aristis acerrimis stramineis infra antrorsum paucisetosis supra glabris circ. 4 mm. longis.

Type specimen: Collected by P. Quarré, No. 419 pro parte, on farm of H. Droogmans, Katuba, Katanga, Belgian Congo, May 15, 1927 (Bruss.; nom. indig. Kibunyubunyu).

Distribution: Katanga, Belgian Congo.

Specimens examined: Quarré 419 pro parte (type, Bruss.).

Similar in habit to *C. Curtisii* of Angola but differing in exterior involucre bracts, which are appressed, moderately hispid below the middle, and about 9–10 mm. long (not reflexed, not “glabrous except at very base,” and not ± 4 mm. long); in ovarial aristae, which are about 4 mm. long and somewhat antrorse-setose below (not ± 1.5 mm. long and not extremely glabrous); etc. The median leaves of the type have the terminal leaflet linear-oblong, about 5 cm. long, and few-dentate (1–3 teeth on each side). Root described by Quarré as running (“racine tracante”).

76. *Coreopsis oligoflora* Klatt, Leopoldina 25: 107. 1889.
C. oligantha Klatt, Ann. Naturh. Hofmus. Wien 7: 103. 1892.

Involucris bractearum exteriores lineares, acriter apiculatae, circ. 1 mm. latae. *C. oligoflora* sensu stricto.

Involucris bractearum exteriores late oblongae vel ovatae, apicaliter obtusissimae, saepius 2.5–4 mm. latae. var. β robusta.

Herba erecta, annua, 5–10 dm. alta, ramosa ramis angulatis, caule ramisque sparsim pilis tenuissimis albis elongatis hispidis. Folia opposita, pilis tenuissimis argenteo-nitidis elongatis plus minusve hispida, breviter petiolata petiolis alato-marginatis basaliter connatis usque ad 1.5 cm. longis, petiolo adjecto 3–6 (–10) cm. longa, bipinnatisecta, segmentis majoribus ovatis vel lineari-lanceolatis, membranaceis, aegre atropunctulatis, dentatis dentibus acriter calloso-apiculatis. Capitula tenuiter pedunculata pedunculis saepius 7–13 cm. longis, radiata, pansa ad anthesin 4–6 cm. lata et circ. 1 cm. alta. Involucris hispidi bractearum exteriores circ. 8, lineares, nitide acriterque calloso-apiculatae, 6–10 mm. longi et circ. 1 mm. latae, interioribus oblongis plerumque aequales. Flores ligulati circ. 8, lutei vel aurantiaci, ligula oblanceolato-elliptici, apice integri vel minutissime denticulati, 2.5–3 cm. longi et usque ad 12 mm. lati. Disci florum stigmata terminaliter angustata. Achaenia late lineari-oblonga, nigra, plana, apicem versus minute erecto-setosa,

lateraliter alata alis 0.6–0.8 mm. latis, marginibus erecto-setosa, corpore circ. 8 mm. longa et cum alis circ. 3–3.5 mm. latis, apice erecto-setoso biaristata aristis tenuibus ± 2 mm. longis antrorsum hispidis.

Type specimen: Collected by *Dr. Buchner*, No. 32, among bushes, Malange, Angola, Portuguese West Africa, March, 1879 (Berl.).

Distribution: Belgian Congo and southwestward across Portuguese West Africa.

Specimens examined (this list doubtless includes some specimens of the more recently described var. *robusta*): *L. Achten* 253B, Luobokasai, Belgian Congo (Bruss.); *F. Allard* 65, Kuku Wungu, Belgian Congo, 1909 (Bruss.); *idem* 330, Kikubungu, Belgian Congo, 1910 (Bruss.); *Baum* 878, alt. 1,300 meters, between Kulei and Kutsi, Mambunda Region, southeastern Angola, Portuguese West Africa, April 29, 1900 (Berl.); *Bavicchi* 14, Esungume Dolo, Belgian Congo, 1913 (Bruss.); *J. Bequaert* 113, Bukama, Belgian Congo, May 12, 1911 (Bruss., 2 sheets); *Dr. Buchner* 32 (type, Berl.); *J. Claessens* 67, Lubuku, Belgian Congo, September, 1907 (Bruss., 2 sheets); *idem* 73, Belgian Congo, August, 1907 (Bruss.); *idem* 88, Ka-Tembo, Belgian Congo, January 18, 1921 (Bruss., 2 sheets); *idem* 400, Koloko Konbe, Belgian Congo, January, 1910 (Bruss.); *F. Flamand*, Kiamohampa, Belgian Congo, September 20, 1911 (Bruss.); *J. Gillet* 806 and 885, Kisantu, Belgian Congo, 1900 (Bruss.); *P. Hamerlinck* 1502 and 1512, Wombali, Belgian Congo, 1914 (Bruss.); *Fr. Hens* 45, becoming shrubby and growing 1.5 meters high at alt. 270 meters, marsh of Stanley Pool, Belgian Congo, August 14, 1888 (Bruss.; Kew); *Em. Laurent*, between Lusambo and Lomani, Belgian Congo, December, 1895 (Bruss.); *idem & Marc. Laurent*, undergrowths, Kondue, Belgian Congo, November 25, 1903 (Bruss.); *Marc. Laurent* 512, Bolobo, Belgian Congo, April 15, 1905 (Bruss.); *E. Lescrauwaet* 188, Mokole (Lubi), Belgian Congo, September 12, 1904 (Bruss.); *Alexander von Mechow* 33, Pungo Andongo, Angola, Portuguese West Africa, January–April, 1879 (Berl., 2 sheets); *idem* 459, Malange, Angola, March, 1880 (Berl.); *Nélis*, Bokala, Belgian Congo, May, 1913 (Bruss.); *P. Pogge* 257, Belgian Congo, March, 1876 (Berl.); *idem* 1282, in cultivations, Mukenge tract (campine), Belgian Congo, November 6, 1881 (Berl.); *idem* 1295, eodem loco, March 15, 1882 (Berl.); *idem* 1309, prairie (campine) on the Lualaba River, southeastern Belgian Congo, April 24, 1882 (Berl.); *A. Sapin*, N'Dolo, Belgian Congo, May, 1906 (Bruss.); *idem*, N'Kolokosso, Belgian Congo, June 28, 1906 (Bruss.); *idem*, Sokomini Lake,

Sankuru (Lubilash) River, Belgian Congo, September, 1906 (Bruss.); *idem*, Katola Msek, Belgian Congo, April, 1908 (Bruss., 2 sheets); *idem*, growing on the plains, Munungu, Belgian Congo, April, 1910 (Bruss.); *R. Schlechter 12474*, Dolo, Belgian Congo, May-June, 1899 (Berl.; Bruss.; Kew); *Sparano 25*, "odor recalling slightly the marguerite," Belgian Congo, June 6, 1913 (Bruss.); *Hyacinthe Vanderyst*, Ndembo, Belgian Congo, August 20, 1906 (Bruss.); *idem*, eodem loco, January 7, 1907 (Bruss.); *idem*, Station at Inkissi Falls, Belgian Congo, May, 1907 (Bruss.); *idem*, Leopoldville, Belgian Congo, May 23, 1907 (Bruss.) and May 27, 1910 (Bruss.); *idem*, Kumpako, Belgian Congo, 1908 (Bruss.); *idem*, N'Boma, Belgian Congo, April 28, 1911 (Bruss.); *idem B224*, Lonzo, Belgian Congo, July 26, 1906 (Bruss.); *idem 700*, Wombali, Belgian Congo, May, 1913 (Bruss.); *idem 1099*, eodem loco, June, 1913 (Bruss.); *idem 1187*, Bandundu, Belgian Congo, June, 1913 (Bruss.); *idem 1341*, Wombali, Belgian Congo, June, 1913 (Bruss.); *idem 1582*, Bokala, Belgian Congo, July, 1913 (Bruss.); *idem 4304*, Bugunu, Belgian Congo, May 28, 1914 (Bruss.); *idem 4885*, Wombali, Belgian Congo, 1914 (Bruss.); *idem 10097*, Kamtsha, Belgian Congo, July, 1921 (Bruss.); *idem 20963*, Lulua-gare, Belgian Congo (Bruss.); *E. Verdick*, Lukafu, Katanga, Belgian Congo, March, 1900 (Bruss.); *F. C. Wellman*, alt. 1,500 meters, Bailundo District, Benguella (Benguela; Abunda) region, eastern Angola (Kew).

Often confused with *Bidens Steppia* (Steetz) Sherff, a species having more elongate exterior involucre bracts, mostly 11 or 12 slender-liguled ray florets instead of about 8 rather wide ones, leaves larger and more decomposed, achenes practically exalate, etc.

Coreopsis oligiflora var. β *robusta* Sherff, Bot. Gaz. 90: 386. 1930.

A specie involucri bracteis exterioribus spathulato-oblongis vel oblongis vel ovatis saepius 2.5-4 mm. latis apicaliter obtusissimis differt.

Type specimen: Collected by *R. Büttner*, No. 408, Bolobo, Belgian Congo, November 5, 1885 (Berl.).

Distribution: Belgian Congo.

Specimens examined: *Joseph Bequaert*, Leopoldville, Belgian Congo, April 9, 1915 (Bruss.); *idem 7205*, Belgian Congo, March 29, 1915 (Bruss.); *Büttner 408* (type, Berl.); *De Giorgi 142*, Kisengwa, Belgian Congo, October, 1922 (Bruss.); *idem 231*, herb of the moist plain, Kanda-Kanda, Belgian Congo, November, 1922 (Bruss.); *D. H. Linder 1706*, moist places at edge of savanna, Bolobo, Belgian

Congo, December 16, 1926 (Berl.); *P. Pogge 1292*, Mukenge tract (campine), Belgian Congo, April 13, 1882 (Berl.); *P. Quarre 2173*, 7-9 dm. tall, on plateau, Saeomintra, Belgian Congo, November, 1930 (Bruss., 2 sheets); *idem 2826*, growing 1 meter tall, Pastorale, Division of Lualu, Belgian Congo, November, 1931 (Bruss., 2 sheets); *idem 2921*, herb 1.2 meters tall, Lovoi, Kamina, Belgian Congo, March, 1932 (Bruss., 2 sheets); *Walter Robyns 138*, much branched at base, ± 1.5 meters tall, right bank of Guhisi, beyond railroad, Kisantu, Belgian Congo, July 3, 1925 (Bruss.); *H. Vanderyst 12366*, between La Labue and La Loange, Belgian Congo, October, 1922 (Bruss.); *idem 21227*, Belgian Congo (Bruss.); *F. Vermoesen 2403*, Belgian Congo, September, 1919 (Bruss., 2 sheets).

Dr. Otto Hoffmann had designated the type varietally under the name *C. oligantha* Klatt in the Berlin Herbarium, but I have not as yet found that he ever published the varietal name.

77. *Coreopsis Quarrei* Sherff, Bull. Jard. Bot. Brux. 13: 289. 1935.

Herba annua, gracilis, erecta, ± 5 cm. alta, caule moderate erecto-ramoso glabrato nunc 1 nunc ± 2.2 mm. crasso. Folia petiolata petiolis usque ad 1.3 cm. longis setoso-ciliatis setis pluriloculatis, petiolo adjecto usque ad 5 cm. longa, bipinnatisecta, foliolis membranaceissimis acute dentatis lobulatisve supra moderate infra (interdum sparsius) adpresso-hispidis. Capitula radiata, pansa ad anthesin ± 4 cm. lata et circ. 1 cm. alta, tenuiter pedunculata pedunculis caulem ramosve terminantibus glabris vel summam versus aegre setosis usque ad 1.2 dm. altis. Involucri demum hemisphaerico-depressi bracteae exteriores circ. 7 vel 8, glabratae vel aegre hispidae, lineari-oblongae, supra interdum dilatatae, apice rotundatae vel subacutae, 3-4 mm. longae, quam interiores ovato-oblongae sparsim setosae dimidio breviores. Flores ligulati ± 8 , aurei, lineari-oblongi, apice integri vel bidenticulati, ± 2.3 cm. longi. Paleae oblongae vel lineari-oblongae, apice subcolorato obtusissimae vel subtruncatae, 6-7.5 mm. longae. Flores tubulosi circ. 4 mm. longi, extrinsecus praecipue ad tubi summam saepe patenti-hispidi. Achaenia plana, brunneo-atra, obovata vel oblonga, alata, corpore 3.5-6 mm. longa et alis inclusis 2-2.5 mm. lata, corporis plurisulculati ipsius facie ventrali erecte setosa setis e tuberculo ortis, facie dorsali non nisi apicem versus tuberculato-setosa, marginibus pectinato-tuberculatis saepius brunneis flavisve numerose erecto-setosa, apice erecte setulosa ac minutissime biaristata aristis tenuibus antrorsum hispidis sub 0.5 mm. longis.

Type specimen: Collected by *P. Quarré*, No. 419 pro parte, on farm of H. Droogmans, Katuba-Elisabethville, District of Upper Katanga, Belgian Congo, May 16, 1927 (Bruss.).

Distribution: District of Upper Katanga, Belgian Congo.

Specimens examined: *Quarré 419* pro parte (type, Bruss.).

Confused by *Quarré* with *C. exilis*, from which it differs in being an annual, having the exterior involuclral bracts 3–4 mm. long and a half shorter than the inner ones, the achenial bodies varying from 3.5 to 6 mm. long, the aristae less than 0.5 mm. long, etc. *C. exilis* is perennial, has involuclral bracts subequal and 9–10 mm. long, achenial bodies about 5.5 mm. long, aristae about 4 mm. long, etc.

78. *Coreopsis Goffardii* Sherff, Bull. Jard. Bot. Brux. 13: 290. 1935.

Herba annua, erecta, 2.5–8 dm. alta; caule glabro, subtetragono, purpurascenti, suberecte ramoso. Folia petiolata petiolis marginatis sparsim hispidis (setis pluriloculatis) 1–3 cm. longis, petiolo adjecto usque ad 1 dm. longa, 2–3-pinnatisecta rhachi petiolo marginato simile; segmentis ultimis nunc oblongis nunc obovato-oblongis nunc plus minusve lanceolatis, utrinque moderate adpresso-hispidula et saepe praecipue supra minutissime glandulosa, membranacea, dentibus saepius subabrupte minutissimeque apiculatis. Capitula ramulos tenues hispidos 1–7 cm. longos terminantia, radiata, pansa ad anthesin ± 3 cm. lata et ± 11 mm. alta. Involucrum hemisphaericum basi dense superne subsparsim adpresso-hispidum, bracteis exterioribus circ. 8, lineari-oblongis, superne saepe latioribus, tergo longitudinaliter 1–3-atronerviis, apice acutis vel subacutis, circ. 4–5 mm. longis, quam interioribus oblongo-ovatis paulum brevioribus. Flores ligulati circ. 8, aurantiaci, ± 1.5 cm. longi, ligula anguste oblongi, inferne glabrati superne minutissime adpresso-hispiduli, apice subintegri. Paleae oblongae, apice obtusae rotundataeve ac erecte ciliolatae, ad anthesin quam corollae tubulosae breviores. Flores tubulosi extrinsecus glabra vel tubi summa (anulo) hispiduli, dentibus saepius aurantiaci, 4–5 mm. longi. Ovaria (achaeniis maturis deficientibus) plana, oblongo-obovata, faciebus glabratis mediane paucistriata, alata, corpore sub 3 mm. longa, marginibus infra obsolete eroso-denticulata summam versus erecte setosa, apice cuneato-emarginato erecte setosa ac biaristata aristis tenuibus antrorsum hispidulis sub 0.5 mm. longis.

Type specimen. Collected by *P. Quarré*, No. 1616, on Mr. Goffard's farm, Kipila-Elisabethville, District of Upper Katanga, Belgian Congo, May, 1929 (Bruss.).

Distribution: Known only from type locality in District of Upper Katanga, Belgian Congo.

Specimens examined: *Quarré 1616* (type, Bruss.).

79. *Coreopsis vulgaris* Sherff, Bull. Jard. Bot. Brux. 13: 291. 1935.

Herba annua, erecta, ± 4 dm. alta, caule glabrato plus minusve tetragono, apicem versus suberecte ramoso. Folia petiolata petiolis tenuibus patenti-ciliatis interdum submarginatis usque ad circ. 2 cm. longis, petiolo adjecto circ. 5–8 cm. longa, 2–3-pinnatifida, segmentis primariis ± 5 ovatis vel ovato-lanceolatis, ultimis membranaceis utrinque adpresso-hispidis dentatis dentibus acriter apiculatis. Capitula pauca (± 7), pedunculata pedunculis subrobustis sparsissime patenti-hispidis (setis crispis albidisque) 1–4 cm. longis, radiata, pansa ad anthesin circ. 3–3.5 cm. lata et ± 1.2 cm. alta. Involucrum magnum depresso-hemisphaericum, ± 2 cm. latum et ± 1 cm. altum, setis acerrimis crispis albidis basi dense alibi subsparsum conspersum; bracteis exterioribus circ. 8, lineari-oblongis, longitudinaliter circ. 3-lineatis lineis atris, apice obtusis vel acutis, 6–11 mm. longis; interioribus ovato-lanceolatis, apice glanduloso-hispidulis, saepius 8–10 mm. longis. Flores ligulati circ. 8, flavi, ligula lineari-oblongi, apice integri vel subintegri, circ. 1–2 cm. longi. Paleae oblongae, apice atriore subrotundatoque vix apiculatae, aristis superatae. Flores tubulosi extrinsecus glabri. Achaenia non visa. Ovaria plana, oblonga vel obovata, faciebus glabrata, marginibus (infra breviter supra longe) apiceque erecto-setosa, alata, corpore alis inclusis 3–4 mm. longa et 1–1.5 mm. lata, biaristata aristis tenuibus antrorsum hispidis circ. 2.5–4 mm. longis et corollae tubum dimidio superantibus.

Type specimen: Collected by A. Becquet, No. 62, at altitude of 1,000 meters, common on savanna, flowering entire year except in dry season, Mukishi-Lomam, District of Middle Katanga, Belgian Congo, September, 1927 (Bruss.).

Distribution: District of Middle Katanga, Belgian Congo.

Specimens examined: *Becquet 62* (type, Bruss.).

The annual habit, large discs, and comparatively inconspicuous rays combine to give this species the appearance of an unattractive weed.—Referred to *Coreopsis* (instead of *Bidens*) with some hesitancy, since it is not known that the mature achenes are alate.

80. *Coreopsis Glorgii* Sherff, Bull. Jard. Bot. Brux. 13: 292. 1935.

Herba annua, erecta, ± 1 m. alta, caule glabro subtetragono tenuiter ramoso. Folia petiolata petiolis tenuibus anguste marginatis hispido-ciliatis circ. 1–1.5 cm. longis, petiolo adjecto ± 7 cm. longa, bipinnatifida, segmentis secundariis oblongo-lanceolatis vel ovato-lanceolatis membranaceis infra moderate supra subsparsim adpresso-hispidis acriter dentatis. Capitula subnumerosa subcorymbose ad ramorum apices disposita, pedicellata pedicellis sparsissime setosis 3–6 cm. longis, radiata, pansa ad anthesin circ. 2.5–3.3 cm. lata et circ. 8–9 mm. alta. Involucrum moderate adpresseque albido-setosum, bracteis exterioribus oblongo-linearibus, apice induratis atque acutis subobtusisve 4–6 mm. longis quam interioribus ovato-lanceolatis plerumque brevioribus. Flores ligulati circ. 8, flavi, ligula lineari-oblongi, apice integri vel minutissime denticulati, circ. 1.5–2 cm. longi. Paleae glaberrimae, cuneate oblanceolatae, apice atriore rotundatae. Flores tubulosi glabri. Achaenia valde obcompressa, nitide brunneo-atra, faciebus pluristriata et (praecipue secundum medium atque apicem versus) erecto-setosa, alarum marginibus minutissime numerosissimeque erecto-setulosa, corpore alis inclusis exteriora ± 7 mm. longa et ± 3.2 mm. lata interiora ± 1 cm. longa et ± 1.7 mm. lata, omnia apice densissime erecto-hispida et biaristata aristis perspicue densissimeque erecto-hispidis circ. 1 mm. longis, setulis stramineo-fulvis.

Type specimen: Collected by *De Giorgi*, No. 170, Katombe, District of Middle Katanga, Belgian Congo, October, 1922 (Bruss.).

Distribution: District of Middle Katanga, Belgian Congo.

Specimens examined: *De Giorgi 170* (type, Bruss.).

Related to *C. oligoflora* and *C. Mattfeldii*. From *C. oligoflora* it differs at once in having the exterior involucre bracts 4–6 (not 6–10) mm. long, the ligulate florets about 1–2 (not about 2.5–3) cm. long, etc. From *C. Mattfeldii* it differs in having the exterior achenes, wings included, about 3.2 (not 4–5) mm. wide, etc.

81. *Coreopsis Mattfeldii* Sherff, Bot. Gaz. 76: 83. 1923.

Herba erecta, ramosa, verisimiliter circ. 7–10 dm. alta, caule subtetragono, glabrato vel disperse piloso, sulcato. Folia petiolata petiolis latis ± 1 cm. longis, petiolis adjectis 4–10 cm. longa, pinnatisecta, utrinque moderatim pilosa, margine parce ciliata, laciniis oppositis indivisis vel pinnatisectis, segmentis ultimis linearibus (2–6 mm. latis), acutis atque indurato-apiculatis. Capitula corymbosa, radiata, pansa ad anthesin circ. 3.5–4 cm. lata et 9 mm. alta. Involucrum bracteae dorso hispidae pilis albis multiloculatis atque ad basim tumidis, aequilongae (5–8 mm.), exteriores lineari-spathu-

latae, interiores ovato-lanceolatae. Flores ligulati circ. 8, flavi, ligula lanceolati vel obovato-lanceolati, striati, apice obscure minuteque denticulati, 1.6–2 cm. longi et 4–9 mm. lati. Paleae hyalinae late oblongae, apice subobtusae, circ. 8 mm. longae. Disci florum stigmata angustatissimo-caudata. Achaenia valde obcompressa, nigrescentia, alata alis 1–1.5 mm. latis, faciebus glabra vel ad costas (et supra sparsim) hispida, margine apiceque hispida, biaristata aristis tenuibus stramineis sursum hispidis 1–2 mm. longis, exteriora obovata 6–8 mm. longa et (alis inclusis) 4.25–5 mm. lata, interiora oblanceolata circ. 8 mm. longa et (alis inclusis) 4 mm. lata.

Type specimen: Collected by *Alexander Carson*, No. 75, Fwamba, Lake Tanganyika, German East Africa, 1894 (Berl.).

Distribution: Known only from type locality in German East Africa.

Specimens examined: *Carson 75* (type, Berl.; cotype, Kew).

Named very appropriately after Dr. Johannes Mattfeld, who most generously assisted in placing at my disposal many of the Berlin Herbarium specimens of African *Coreopsis* and *Bidens* for detailed study. It bears a strong superficial resemblance to *Bidens Steppia* (Steetz) Sherff, but can easily be distinguished by its achenes and involucre bracts. The many mature achenes on the type differ remarkably from the ones on the type and other specimens (already cited in my monograph of the genus *Bidens*) of *Bidens Steppia*. For *B. Steppia* they are at most widely oblong-linear in outline, 7.5–9 mm. long and 2.5–3 mm. wide; there is merely a thickened lateral ridge, wings being absent. For *Coreopsis Mattfeldii* the achenes are much thinner and wider, the outer ones being obovate, 6–8 mm. long and 4.25–5 mm. wide, the inner ones being oblanceolate, about 8 mm. long and 4 mm. wide; all are winged, and even on submature fruiting heads the rounded upper ends of the wings, adjacent to the aristae, are easily visible to the eye. The external bracts about equal the inner ones in length in *C. Mattfeldii*; in *Bidens Steppia* they tend to exceed the inner ones by 2–6 mm.

The nearest ally in *Coreopsis* is *C. oligiflora* Klatt.

82. *Coreopsis injucunda* Sherff, Bull. Jard. Bot. Brux. 13: 293. 1935.

Herba annua, erecta, ramosa, 4–10 dm. alta, caule ramisque subtetragonis glabris. Folia petiolata petiolis tenuibus marginatis hispidulo-ciliatis setis pluriloculatis usque ad ± 2.5 cm. longis, petiolo adjecto ± 6 cm. longa, bipinnatisecta segmentis linearibus subacriter

apiculatis membranaceis utrinque marginibusque sparsim albidohispidis. Capitula moderate numerosa, pedunculata pedunculis ramos terminantibus sparsim hispidis tenuibus saepius 1–1.5 dm. longis, radiata, pansa ad anthesin circ. 4–4.5 cm. lata et 1.2–1.4 cm. alta. Involucri hispidi bracteae exteriores circ. 8, subulato-lanceolatae, basi connatae, apice acutae, circ. 4–6 mm. longae, quam interiores oblongo-ovatae paulo breviores. Flores ligulati circ. 8, flavi, ligula oblonge lineares, apice integri, circ. 2.5 cm. longi. Paleae oblongae, apice obtusissimae vel subtruncatae, achaeniorum aristas superantes. Florum tubulosorum corollae circ. 5 mm. longae, extus glabrae. Achaenia plana, atra, obovata vel oblonga, corpore 4.5–6.5 mm. longa et alis inclusis circ. 2–2.3 mm. lata, faciebus pluristriata dorsali parce ventrali moderate erecto-setulosa, marginibus apiceque numerose erecto-ciliata, biaristata aristis tenuibus stramineis antrorsum hispidulis sub 1 mm. longis.

Type specimen: Collected by *P. Quarré*, No. 1662, on Mr. Goffard's farm, Kipila-Elisabethville, District of Upper Katanga, Belgian Congo, May, 1929 (Bruss., 2 sheets).

Distribution: District of Upper Katanga, Belgian Congo.

Specimens examined: *Quarré 1662* (Bruss., 2 type sheets).

83. *Coreopsis Borianiana* Schz. Bip. ex Schweinf. Verh. Zool. Bot. Ges. Wien 18: 684. 1868. *C. Borianiana* var. *cannabina* Schz. Bip. loc. cit. *C. guineensis* O. & H. in Oliver, Fl. Trop. Afr. 3: 390. 1877; etiam in Hutch. & Dalz. Fl. West Trop. Afr. 2: 143, f. 217. 1931. *C. Chevalieri* O. Hoffm. & Muschl. Bull. Soc. France 57, Mém. 8: 118. 1910. *C. chrysopterocarpa* Chiov. Ann. Bot. Roma 9: 75. 1911.

Involucri bracteae exteriores 9–12, uniseriales, 0.7–1.5 cm. longae.

C. Borianiana sensu stricto.

Involucri bracteae exteriores 18–22, biseriales, plerumque 1.4–1.8 cm. longae..... var. *β multiplex*.

Herba annua, erecta, plus minusve glabra, 6–1.5 dm. alta, caule aegre subtetragona vel etiam fere teres. Folia opposita saepius breviter petiolata petiolis latis marginatis plerumque 3–12 mm. longis, petiolo adjecto 5–13 (etiam –18) cm. longa, simplicia vel 2–3-partita, lamina segmentisve remote acriterque denticulatis (denticulis saepe subcapilliformibus), linearibus, utrinque elongato-angustatis, plerumque 4–10 mm. latis, membranaceis, minutissime spinuloso-ciliatis. Capitula non numerosa, tenuiter pedunculata pedunculis 5–18 cm. longis ad apicem saepe abrupte dilatatis ac

paucis bracteis bracteae involucris exterioris valde similibus obsitis, radiata, pansa ad anthesin 5–7 cm. lata et 1.3–2 cm. alta. Involucris bracteae exteriores 9–12, uniseriales, anguste lineares, tergo glabrae vel hispidae, ad apicem saepe minute spinuloso-ciliatae, acriter vel subacriter (saepe indurato-) apiculatae, 0.7–1.5 cm. longae et 0.6–1 mm. latae; interiores lanceolato-oblongae vel ovato-oblongae, apice plerumque dorso interdum pubescentes, saepius paulo longiores. Flores ligulati circ. 8, aurei, ligula obovato-oblongi, 8–14-striati, apice obtuso obscure vel manifeste denticulati, 2.5–3 cm. longi et 8–14 mm. lati. Paleae oblongo-oblancoolatae, demum interdum crassiusculae, circ. 10–18 mm. longae et 2.5–4.5 mm. latae. Disci florum stigmata caudato-appendiculata. Achaenia valde obcompressa, alata, circumambitu (alis inclusis) ovato-orbiculata, corpore ipso nigra lineari-oblonga tuberculato-setosa 9–15 mm. longa et 1.2–2.3 mm. lata, alis badia vel argentea nitida dense setoso-ciliata circ. 2.8–3.8 mm. lata, apice setosa et biaristata aristis erectis, sursum hispidis, circ. 2.5–4 mm. longis.

Type specimen: Collected by *Boriani*, No. 42, in the Fesoglu, northeastern Africa, 1839 (Mus. V.).

Distribution: Across Africa from Eritrea to Sénégal and reaching southward to Kamerun and Togo.

Specimens examined: *C. Barter* 933, Nigeria, 1857–1859 (Berl.; Gray); *Boriani* 42 (type, Mus. V.; etiam fragmentum typi in herb. Schz. Bip. in Par.); *Aug. Chevalier* 2083, Koulitsoro, Sudan, 1899 (Berl.; Bruss.); *idem* 9633, Massenya (Massenia), Bagirmi (Baguirmi), Sudan, 1902–1904 (Berl.); *idem* 9721, Kolkélé and Moito, Dar-el-Hadjer, Baguirmi Nord, Territory of Chari, September 6–9, 1903 (herb. *Chevalieri*; type of *C. Chevalieri* O. Hoffm. & Muschl.); *Dr. Kersting* 14, alt. 350 meters, Trógode, Kerkri, Togo, October 28, 1897 (Berl.); *idem* 422, alt. 400 meters, Sokodé-Basari, Togo, October, 1901 (Berl.); *Lécard* 290, Sénégal (Bruss.); *C. Ledermann* 5243, growing 1–1.5 meters high, alt. 380 meters, between Tschamba and Doreba, Kamerun, September 18, 1909 (Berl., 2 sheets); *A. Pappi* 7733, alt. 1,000 meters, Baza Cunama-Barentù, Erythrea, November 28, 1908 (Flor., type of *Coreopsis chrysopterocarpa* Chiov.); *T. Pfund*, Dar-Fur, 1876 (Berl.); *idem* 336, Takari on the Rahad, Kordofan, July, 1875 (Berl., 2 sheets); *Dr. Rowland*, common in savannas, western Lagos, 1893 (Berl., 2 sheets); *F. Schroeder* 74, alt. 350 meters, Sokodé Farm, Togo, October 19, 1900 (Berl., 2 sheets); *G. Schweinfurth* (Flora of Gallabat No. 439), Matamma, Gallabat (Galabat) region, northwestern Abyssinia, middle of October, 1865 (herb.

Schz. Bip. in Par.); *idem* (Flora of Gallabat No. 585), eodem loco et tempore (Berl., type material of var. *cannabina* Schz. Bip.).

Coreopsis Chevalieri O. Hoffm. & Muschl., based on *Aug. Chevalier 9721*, is seen from its type specimen (which was very kindly obtained for my study from the Chevalier Herbarium by Dr. H. Humbert of Paris) to belong here.

Coreopsis Borianiana var. β *multiplex* Sherff, Bot. Gaz. 90: 385. 1930.

A specie involucri bracteis exterioribus biserialibus 18–22, plerumque 1.4–1.8 cm. longis quam interioribus saepe longioribus differt.

Type specimen: Collected by "Graf. Zech." under No. 168, Kete Kratschy, Togo, October 21, 1898 (Berl.).

Distribution: Known only from type locality in Togo.

Specimens examined: *Zech. 168* (type, Berl.).

84. *Coreopsis togensis* Sherff, Bot. Gaz. 76: 87. 1923.

Herba perennis, caule glabro, rubro-viridi, sulcato, subtetragono, usque ad 2 m. alto. Folia petiolata petiolis 0.5–4 cm. longis, petiolo adjecto 10–18 cm. longa et usque ad 20 cm. lata, pinnatim 3- vel 5-partita, foliolis lanceolatis, apice saepe longe attenuatis, grosse vel moderatim serratis dentibus acriter apiculatis infra pallidioribus, margine minute ciliatis, aliter glabris, lateralibus usque ad 11 cm. longis et 3 cm. latis, terminali usque ad 16 cm. longo et 4 cm. lato. Capitula pauca, longe pedunculata pedunculis maximam partem glabris usque ad 18 cm. longis, radiata, pansa ad anthesin 7–9 cm. lata et circ. 1.5 cm. alta. Involucrum non plerumque pubescens nisi basi, bracteis exterioribus 7–10, magnis, foliaceis, lanceolatis, apice angustatis, interdum ciliatis, 1–2 (et etiam usque ad 4) cm. longis, interiores lanceolatas aequantibus, vel multo superantibus. Flores ligulati 7–9, lutei, ligula late elliptico-lineares vel ovato-oblongeolati, apice minute vel grosse profundeque (sinu usque ad 1 cm. alto) dentati, 3–4.5 cm. longi et 0.7–2 cm. lati. Paleae tenuiter lineari-oblongae pluribus lineis percursae apice subacutae, omnino plus minusve flavidae, 1–1.5 cm. longae. Disci florum stigmata angusto-elongata. Achaenia obcompressa, brunneo-atra, oblongo-linearum, plerumque alata, margine antrorsum ciliata, supra faciebus et apice erecto-hispida, corpore 8–10 mm. longa et (alis inclusis) 2.5–3 mm. latis, biaristata aristas nudis vel basim versus antrorsum 1- vel 2-spinulosis, circ. 1 mm. longis.

Type specimen: Collected by *R. Buettner*, No. 142, on steppe behind Ketzabenki, Togo, August 29, 1890 (Berl., 2 sheets).

Distribution: Togo.

Specimens examined: *Buettner 142* (Berl., 2 type sheets); *W. Busse 3416*, at alt. of about 700 meters, Hausberg, near Misahoehe, Togo, December 7, 1904 (Berl., 2 sheets); *Kling 60*, Jege, Bismarckburg, Togo, 1889 (Berl.); *idem 166*, eodem loco, October 30, 1889 (Berl.).

On the type specimens the exterior involucre bracts are much larger than in *Busse's* specimens, being twice the length of the inner ones. The type has also larger leaves and ligulate florets, some of the ligules reaching 2 cm. in width, but all the other characters are too much alike to warrant specific or probably even varietal separation of the *Busse* plants. The achenial measurements are taken from *Busse's* plants, as the achenes of the type are immature.

85. *Coreopsis scabrifolia* Sherff, Bot. Gaz. 76: 86. 1923.

Herba simplex vel parce ramosa, caule quadrangulato, glabro, sulcato, perenni e basi lignea, verisimiliter circ. 1 m. alto, non robusto. Folia nunc sessilia, nunc petiolata petiolis alatis et elongatis usque ad 4 cm. longis, petiolo adjecto 8–15 cm. longa et 1–3 cm. lata, lanceolata (raro oblanceolato-linearia), indivisa (raro pauca pinnatim lobata), acriter et interdum grosse dentata, utrinque acuminata vel tantum acuta, scabra, minute spinuloso-ciliata, infra ad venas sparsim piloso-hispida et pallidiora. Capitula pauca (1–4), subtenuiter pedunculata pedunculis maximam partem glabris 3–12 cm. longis, radiata, pansa ad anthesin 5–6 cm. lata et circ. 1 cm. alta. Involucri bractee exteriores 8–11, lineares vel lineari-lanceolatae, dorso basi hispidae, 1–1.5 cm. longae, interiores lanceolatas aequantes vel paulo superantes. Flores ligulati circ. 8, flavi, ligula elliptici vel ovato-lanceolati, 2–2.5 cm. longi et 5–12 mm. lati. Paleae tenuiter lineari-oblongae, circ. 5–7-purpureo- vel brunneo-striatae, circ. 1 cm. longae. Disci florum stigmata incrassata terminaliter caudata. Achaenia (alis inclusis) brunneo-atra, late linearia, valde obcompressa, moderatim sed inconspicue alata, antrorsum setosa, corpore 9–11 mm. longa et (alis inclusis) 2–3 mm. lata, biaristata, aristis nudis vel sursum 1–3-spinulosis, 1.5–2.5 mm. longis.

Type specimen: Collected by *T. Kassner*, No. 2776, under trees, Kundelungu, Belgian Congo, May 15, 1908 (Berl.).

Distribution: Southeastern Belgian Congo.

Specimens examined: *S. De Giorgi*, vicinity of Elisabethville, Belgian Congo, 1923 (Bruss.); *Homblé 329*, bordering stream,

eodem loco, May, 1912 (Bruss., 2 sheets; nom. indig., musombé); *Kassner 2776* (type, Berl.: cotypes, Brit., 2 sheets).

The general habit is deceptively like that of *Bidens Baumi* (O. Hoffm.) Sherff, and, were it not for the achenial and involucre differences, distinction between the two would be at times difficult.

86. *Coreopsis palmata* Nutt. Gen. Amer. 2: 180. 1818. *Calliopsis palmata* Spreng. Syst. Veg. 3: 611. 1826. *Coreopsis pauciflora* Lehm. Ind. Sem. Hort. Hamb. 1833; cf. Linnaea 10: Litt. 76. 1836. *Coreopsis praecox* Fresen. Linnaea 13: Litt. 93. 1839; cf. Ind. Sem. Hort. Bot. Francofurt. 1838.

Herba perennis, erecta, 5–9 dm. alta, caulibus ad basim horizontalem radicanibus glabris vel ad nodos hirsutis, simplicibus vel paulo ramosis, tetragonis, foliosis. Folia opposita, principalia (summa plerumque indivisa exclusa) petiolata petiolis planis alatis 0.4–2.5 cm. longis et 3–6 mm. latis, petiolo adjecto 2–7 cm. longa, rigida, crassiuscula, suberecta, pedato- vel palmato-tripartita segmentis integris vel irregulariter 2–3-lobatis, segmentis (vel lobis) ultimis petiolo similibus oblongo-linearibus supra atque infra glabra marginibus scabrido-ciliatis apice saepius obtusis vel subrotundatis, plerumque 3–6 mm. latis. Capitula plerumque 1–3 (rarius usque ad 6), breviter pedunculata pedunculis glabris 1–4 cm. longis, radiata, pansa ad anthesin nunc 2.5–3.5 nunc etiam 4–6 cm. lata, 0.9–1.5 cm. alta. Involucri bracteae exteriores 8–12, late lineari-oblongae, pallidae, obtusae, tergo glabrae, marginibus scabrido-ciliatae, 5–9 mm. longae, interdum subbiseriatim dispositae, quam interiores oblongo-obovatae irregulariter (et praecipue superne) ciliolatae paulo breviores. Flores ligulati circ. 8, flavi, ligula oblongo-obovati, apice plus minusve rotundato obsolete dentati, 1.5–2.7 cm. longi. Paleae angustissime oblongo-lineares (filiformes), supra moderate dilatatae, apice acutae, demum ± 6.5 mm. longae. Florum tubulorum stylorum rami anguste conico-appendiculati. Achaenia valde obcompressa, elliptico-oblonga, basim versus attenuata, glabra, subnigra, anguste alata, apice alis productis breviter bidentata, omnino 5–6.5 mm. longa et 1.8–2.3 mm. lata.

Type specimen: No particular specimen cited. Habitat given by Nuttall as "on the open plains of the Michigan Territory, Illinois, and Lower Louisiana."

Distribution: Wisconsin and eastern Manitoba southwardly to Indiana, Missouri, and Oklahoma.

Specimens examined: *J. A. Allen*, Iowa (Field); *C. F. Baker*, St. Croix Falls, northwestern Wisconsin, August 15, 1900 (Gray);

C. R. Barnes, Converse, Missouri, June 30, 1877 (Field); *M. S. Bebb*, prairies, Winnebago County, Illinois, September, 1859 (Gray); *idem*, prairies, Marion County, Illinois, 1860 (Field); *Robert Bebb* 50, Clarke, Indiana, 1894 (Field); *idem* 1048, open hillside, Lauderdale, Wisconsin, July 19, 1902 (Field); *H. C. Benke* 3967, Crystal Lake, Illinois, June 30, 1923 (Field); *O. W. Blakley* 1451, in woods near Page, Oklahoma, June 20, 1914 (Gray); *E. Bourgeau*, Winnipeg Valley, Canada, 1859 (Berl.); *Fred Brendel*, Peoria, Illinois (Field); *idem*, Illinois (Berl.); *Buckley*, Illinois (Gray); *B. F. Bush* 160, Montier, Missouri, June 30, 1894 (Berl.; Gray); *idem* 3249, prairies, Purdy, Missouri, August 17, 1905 (Gray); *I. W. Clokey* 2428, dry prairie soil, Niantic, Illinois, June 29, 1915 (Field; Gray); *George L. Clothier & H. N. Whitford* 1037, prairies, Brown County, Kansas, July 30, 1897 (Gray); *Robert Combs & C. R. Ball* 517, Ames, Iowa, June 25, 1897 (Berl.; Gray); *John M. Coulter*, field near LaPorte, Indiana, July 22, 1878 (Field); *idem*, Kankakee River, Indiana, 1882 (Field, 2 sheets); *R. I. Cratty*, Iowa (Field); *idem*, Armstrong, Iowa, July 18, 1897 (Gray); *idem* 16, Emmet County, Iowa, 1879 (Field); *Arthur W. DeSelm* 275 and 276, south of Monee, Illinois, July 6, 1913 (Field); *idem* 394, highways near Otto, Illinois, July 19, 1913 (Field); *F. W. Dewart*, St. Cloud, Minnesota, September, 1892 (Mo.); *H. Eggert*, St. Louis, Missouri, June 29, 1875 (Berl., 2 sheets); *idem*, dry ground, eodem loco, June 18, 1886 (Gray); *idem & Sydow*, prairie and dry hills, eodem loco, July 1, 1874 (Gray); *W. H. Emig* 146, along roads near Duroc, Missouri, July 2, 1913 (Mo.); ex herb. *T. J. & M. F. L. Fitzpatrick*, common, woods and prairies, Allamakee County, Iowa, June 27, 1895 (Field); *W. D. Frost*, Willmar, Minnesota, July, 1892 (Berl.); *Frank C. Gates* 598, Ravenswood, Illinois, July 17, 1905 (Field); *idem* 3148, Zion City, Illinois, July 19, 1909 (Field); *H. A. Gleason*, in the black oak association, Shirland, Illinois, June 29, 1908 (Gray); *idem*, bunch-grass prairies, Milroy, Illinois, July 6, 1908 (Gray); *idem* 326, Forsythe, Illinois, June 10, 1896 (Gray); *Elihu Hall*, dry, open timber lands, Athens, Illinois, 1861 (Field, 2 sheets); *J. R. Heddle* 698, Madison, Wisconsin, August 1, 1907 (Field); *W. Hoffman*, Corn Creek, Ozark Region, Missouri, June 21, 1870 (Berl., 2 sheets); *J. M. Holtzinger*, Lamoille, Minnesota, June, 1895 (Field); *E. W. D. Holway*, prairies, Decorah, Iowa, July 16, 1888 (Field); *Hortus Lipsiae*, ex Illinois (Berl.); *D. Houghton*, 200 miles above Falls of St. Anthony, upper Mississippi River (Gray); *idem*, dry prairie of upper Mississippi River above Falls of St. Anthony, July, 1832 (N.Y.); *O. E. Lansing, Jr.* 307,

prairie soil, Hammond, Indiana, June 28, 1898 (Field); *idem* 2797, roadside, Chicago, Illinois, July 19, 1910 (Field; Gray); *idem* 3113, alt. 445 meters, fallow field east of Mansfield, Missouri, June 5-12, 1911 (Field; Gray); *I. A. Lapham*, Milwaukee, Wisconsin (Gray); *Leavenworth*, Louisiana (Gray); ex *Lehmannio ipso* sub nom. *Coreopside pauciflora* (Gray; N.Y.); *Ray N. Lloyd*, prairies, Ravenswood, Illinois, July 11, 1887 (Field); *W. H. Manning*, Lake City, Minnesota, August 13, 1883 (Gray); *F. E. McDonald*, dry prairies, Peoria, Illinois, June, 1891 (Field); *idem*, eodem loco, 1900-1901 (Field); *idem*, eodem loco, June, 1904 (Gray); *idem*, eodem loco, June, 1915 (Field); *Mead*, Illinois, 1850 (Gray); *Edgar A. Mearns* 144, Fort Snelling, Minnesota, July 16, 1888 (Field); *R. T. Morgan*, vicinity of Fountaindale, Illinois, August, 1877 (Berl.); *E. J. Palmer* 18078, dry, open woods, near Ironton, Missouri, June 26, 1920 (Gray); *Harry N. Patterson*, prairies near Oquawka, Illinois, July (Field); *idem*, near Oquawka, June 20, 1872 (Field); *A. S. Pease*, dry soil south of Champaign, Illinois, October 9, 1920 (Gray); *idem* 12394, Champaign, September 11, 1909 (Gray); *Donald C. Peattie* 8, moist prairie, East Chicago, Indiana, July 31, 1920 (Field); *Ns. Riehl* 41, hills, St. Louis, Missouri, June, 1838 (Berl.); *Benjamin L. Robinson*, Normal, Illinois, July, 1887 (Gray); *C. O. Rosendahl* 656, Spring Grove, Minnesota, June 30, 1902 (Gray); *J. H. Sandberg*, Hennepin County, Minnesota, August, 1889 (Field, 2 sheets); *idem*, copses, eodem loco, July, 1890 (Field); *Savage & Stull* 60, Ironton, Missouri, June 16, 1897 (Field); *J. H. Schuette*, St. Anthony Park, Minnesota, July 2 and 14, 1888 (Field); *idem*, eodem loco, July 8, 1888 (Field; Gray); *idem*, St. Anthony, Minnesota, July 16, 1888 (Field); *idem*, Plover, Wisconsin, July 26, 1888 (Gray); *idem*, Green Bay, Wisconsin, August 13, 1899 (Gray); *idem*, Green Lake, Wisconsin, August 13, 1899 (Field); *E. P. Sheldon*, Sleepy Eye, Minnesota, July, 1891 (Field); *idem*, Fort Snelling, Minnesota, June, 1895 (Field); *Earl E. Sherff* 284, St. Louis, Missouri, July 7, 1910 (Gray); *idem* 1642, dry sandbarrens west of Kankakee, Illinois, August 3, 1912 (Field); *idem* 1781, dry hill, Elgin, Illinois, August 27, 1912 (Field, 2 sheets); *H. C. Skeels* 375, Gougar's Prairie, Joliet, Illinois, July 14, 1904 (Field); *Ernest C. Smith* 510, roadsides, Hinsdale, Illinois, September 2, 1902 (Field); *G. W. Stevens* 2713, open woods in mountain valley near Page, Oklahoma, September 9, 1913 (Gray); *J. T. Stewart*, bluffs around Peoria, Illinois, 1867 (Field); *E. B. Uline*, Fish Lake, LaPorte County, Indiana, July, 1891 (Field); *idem*, Mishawaka, Indiana, July 1, 1891 (Field, 2 sheets); *L. M. Umbach*, prairies, Du Page, Illinois, July 6, 1898 (Berl.; Field; Gray).

87. *Coreopsis verticillata* L. Sp. Pl. 907. 1753. *Chrysanthemum Marianum*, etc. Pluk. Mant. pl. 344, f. 4. 1769. *Coreopsis tenuifolia* Ehrh. Beitr. 7: 168. 1792; Schkuhr Bot. Handb. edit. 2. pl. 260b, fig. ad dextr. 1808. *Coreopsis verticillata* var. β *tenuifolia* Michx. Fl. Bor. Amer. 2: 139. 1803. *Bidens verticillata* (L.) Baill. Hist. Pl. 8: 305. 1886.

Herba perennis, glabra, caulibus e basi plus minusve horizontali erectis, 5–9 dm. altis, subangulatis, superne ramosis. Folia opposita, sessilia, 3–6 cm. longa, laminis palmatim 3-partitis, segmentis 1–2-pinnatis, ultimis lineari-filiformibus, acriter apiculatis, 0.3–1 mm. latis. Capitula saepius pauca, saepe corymbosa, tenuissime pedunculata pedunculis glabris vel sparsissime pilosis, radiata, pansa ad anthesin 2.5–5 cm. lata et 6–9 mm. alta. Involucri bracteae exteriores circ. 8, oblongae vel oblongo-lineares, 4–6 (raro –9) mm. longae, subglabrae, apice saepius obtusae, quam interiores elliptico-oblongae minutissime pubescentes plerumque paulo breviores. Flores ligulati circ. 8, flavi, ligula elliptico-oblongi, apice integri vel minute denticulati, 1.2–2.5 cm. longi. Paleae lineares vel filiformes, superne latiores, apice acutae, ± 4 mm. longae. Flores tubulosi flavi, pubescentes, stylorum ramis apice cuspidato-appendiculatis vel acriter conicis. Achaenia plana, oblongo-obovata, faciebus glabris subatra, marginibus anguste flavido-alata, apice exaristata vel (alis parce productis) vix bidentatis dentibus laceratis, omnino 3–5 mm. longa et 1–1.7 mm. lata.

Type specimen: No type cited by Linnaeus, although Virginia was given for the habitat. Linnaeus' first citation of literature is that of Gronovius, Virg. 105, whence the type would be understood to be a plant collected by *John Clayton* in Virginia (as then bounded) and perhaps still extant (Brit.).

Distribution: Maryland to Florida, Alabama, and Arkansas. Reported by some authors as extending to Kentucky and Nebraska. Probably not native farther north, although frequently cited for Ohio, Michigan, Canada, etc. (cf. Torr. & Gray, Fl. N. Amer. 2: 342. 1843; Gray, Syn. Fl. N. Amer. 1, pt. 2: 293. 1884). Occasionally escapes from gardens.

Specimens examined: *Anon.* 576, Arkansas, September, 1835 (Berl.); *anon.*, cult., June, 1818 (Berl.); *W. W. Ashe*, Chapel Hill, North Carolina, July, 1898 (Field); *M. S. Bebb*, District of Columbia, 1863 (Field; Gray); ex *Biltmore Herb.* 437a, open pine woods, Spartanburg, South Carolina, June 17, 1897 (Field; Gray); *Walter Blair*, dry ridges, Prince Edward County, Virginia, June, 1881

(Gray); *S. F. Blake 9542*, in colony, sandy field, Washington, District of Columbia, July 11, 1926 (Pom.); ex herb. *J. W. Blankinship*, Southern Pines, North Carolina, July 18, 1895 (Gray); *Buckley*, southeastern United States (Gray); *Agnes Chase 2382*, in woods, Riverdale, Maryland, June 22, 1904 (Field); *eadem 2474*, rocky woods, West Chevy Chase, Maryland, July 12, 1904 (Field); *A. H. Curtiss*, Virginia (Field); *idem*, Bedford County, Virginia, June 10, 1871 (Gray); *Earl Jerome Grimes 3768*, border of woods beside railway, vicinity of Williamsburg, Virginia, June 16, 1921 (Gray); ex herb. *D. Gronovii* (Berl.; cotype?); *James Hall*, Virginia, 1828–1834 (Field); *R. M. Harper 5*, alt. 345 meters, rocky bank of Town Creek on Sand Mountain, near Chavies, Alabama, November 24, 1905 (Gray; Mo.); *A. A. Heller 933*, about Suffolk, Virginia, June 8–13, 1893 (Field, 3 sheets; Gray); *Theodor Holm*, open thickets, Brookland, District of Columbia, June, 1894 (Gray); *Hort. Berol.*, cult., July 25, 1815 (Berl.); *idem*, cult., September, 1834 (Berl.); *idem*, cult., 1837 (Berl.); *H. D. House 150*, sandy woods, Takoma Park, District of Columbia, August 3, 1904 (Kew); *G. MacCarthy*, District of Columbia (Field); *E. L. Morris 105*, sandy roadsides along Potomac River, from Chain Bridge to opposite Cabin John Bridge, Virginia, July 1, 1899 (Field); *Thomas C. Porter*, 40 miles south of Lynchburg, Virginia, July 17, 1880 (Field); *L. F. & Fannie R. Randolph 150*, dry, sandy soil, sterile hillside field, vicinity of Lorton, Virginia, June 14, 1922 (Gray); *Arthur Schott*, near Georgetown, District of Columbia, August, 1857 (Field); *idem*, woods near Georgetown, June 22, 1860 (Field); *Earl E. Sherff 253*, cult., St. Louis, Missouri, July 6, 1910 (Field); *idem 5004*, cult., Harvard Univ. Bot. Gard., August 12, 1929 (Field); *John K. Small*, alt. 75 meters, on banks of Little Long Creek, Albemarle, North Carolina, August 22, 1894 (Field); *idem & A. A. Heller 372*, between Gold Hill and Falls of the Yadkin, Stanley County, North Carolina, August 18, 1891 (Field, 3 sheets); *E. S. Steele*, Washington, District of Columbia, August, 1889 (Pom., 2 sheets).

88. *Coreopsis pulchra* Boynt. in Small, Fl. S. E. United States 1277, 1340. 1903.

Herba perennis, erecta, glaberrima, 4–7 dm. alta, perspicue foliosa, caulibus moderate angulatis, plus minusve fastigiato-ramosis. Folia opposita, sessilia, principalia 2.5–4.5 cm. longa, palmatim circ. 3-partita foliolis mox subpalmatimque 2–3-partitis, segmentis ultimis anguste oblongeque linearibus, integris, 1-nervatis, membranaceis, eciliatis, apice obtusis, 2–4 cm. longis et 0.5–1.5 mm.

latis. Capitula numerosa, corymbosa, tenuiter pedunculata pedunculis saepius 4–10 mm. longis, radiata, pansa ad anthesin 3–5 cm. lata et circ. 9–11 mm. alta. Involucri bracteae exteriores 8–10, lineari-oblongae, superne saepe sensim vel subabrupte latiores, apice obtusae, glabrae, 5–8 mm. longae; interiores ovatae, apice pubescentes, plerumque tantum 4–6 mm. longae. Flores ligulati 6–8, intense flavi, ligula elliptico-oblongi vel anguste obovati, apice integri vel vix denticulati, 1.6–2.4 cm. longi. Paleae anguste lineares, apice saepius dilatatae, ± 6 mm. longae. Flores tubulosi corollis purpureo-brunnei, stylorum ramis apice acriter conicis. Achaenia obcompressa, oblongo-obovata, anguste alata, apice corona humili lacerataque ornata, circ. 4 mm. longa.

Type specimen: *Biltmore Herb.*, No. 14728 of the former Biltmore Herbarium. Specimen was collected in "northern Alabama," but doubtless was destroyed, along with many others, by the flood waters at Biltmore.

Distribution: In region of the Lookout Mountain, northeasternmost Alabama, and perhaps in adjacent Georgia.

Specimens examined: *T. G. Harbison*, cult., Highlands, North Carolina, August 1, 1905 (Gray, 2 sheets) and August, 1906 (Gray); *Charles Mohr*, Mentone, Alabama (N.Y., 2 sheets); *idem*, open, rocky woods, Mentone, near the Falls, Lookout Mountain, September 18, 1892 (U.S.); *idem*, damp rocks, DeSoto Falls, near Mentone, September 12, 1898 (U.S.); *Albert Ruth 612*, sandy soil, Lookout Mountain, DeKalb County, Alabama, July, 1898 (N.Y.); *idem 624*, near DeSoto Falls, Lookout Mountain, July, 1898 (U.S.).

89. *Coreopsis Delphinifolia* Lam. Encycl. 2: 108. 1786; Bot. Mag. pl. 156, sub nom. *C. verticillata*. 1791. *Ceratocephalus Delphinii foliis* Vaill. Hist. Acad. roy. sci. 1720: 328. 1722; Ehret Pl. et Pap. Rar. Depict. pl. 9, f. 1749. *C. verticillata* var. *linearis* Michx. Fl. Bor. Amer. 2: 138. 1803 (fide Torr. & Gray, Fl. N. Amer. 2: 342. 1843). *C. discolor* Link, Enum. Hort. Berol. 2: 353. 1822. *C. Delphinifolia* Lam. ex Ind. Lond. 2: 294. 1930 (sphalm). Foliorum segmenta magna ex parte 2–3.5 mm. lata.

C. Delphinifolia sensu stricto.

Foliorum segmenta magna ex parte 0.3–2 mm. lata. var. β *chlooidea*.

Herba perennis, caulibus erectis, gracilibus, tetragonis, glabris vel ad nodos hispidis, ad summam ramosis, 6–15 dm. altis, per totam longitudinem foliosis, internodiis folia vix aequantibus. Folia opposita, sessilia, suberecta vel parce patentia, 5–9 cm. longa, summa

saepe indivisa integraque, alia palmatim 3-partita, foliolo mediano plerumque rursus in 3-5 segmenta diviso, foliolis lateralibus simplicibus vel raro 2-partitis, segmentis ultimis linearibus membranaceis acutis glabris integris 1-6 (plerumque 2-3.5) mm. latis. Capitula corymbosa, tenuissime pedunculata pedunculis glabris 2-7 cm. longis, pansa ad anthesin 3-5 cm. lata et circ. 8-10 mm. alta. Involucri glabri bractee exteriores 8-10, oblongo-lineares, obtusae, 4-6 mm. longae, quam interiores ovatae nunc vix longiores nunc vix breviores. Flores ligulati circ. 8, flavi, ligula anguste elliptico-oblongi, apice integri vel parce dentati, 1.3-2.5 cm. longi. Paleae filiformes, ad summam paulo dilatatae, achaenia superantes. Flores tubulosi corolla brunnei, stylorum ramis apice tenuiter caudatis. Achaenia obcompressa, circumambitu (alis brunneis 0.5-1 mm. latis inclusis) elliptico-oblonga vel obovata, 4.5-6 mm. longa et (alis inclusis) 2-4 mm. lata, glabra, corpore subnigra, apice minute 2-dentata dentibus fimbriatis.

Type specimen: The species was founded directly upon *Ceratocephalus Delphinifolius* Vaill. as illustrated by Ehret (loc. cit.) and supported by the material cultivated in the King's Garden at Paris. The native habitat was given as Virginia.

Distribution: Virginia to Georgia and Alabama.

Specimens examined: Liberty Hyde Bailey, cult., Ithaca, New York, July 24, 1935 (Field; sub nom. *C. microphylla*); ex *Biltmore Herb.*, sub num. 2064A, rare in moist soil, Eastman, Georgia, June 4, 1900 (N.Y.); A. H. Curtiss 6825, low ground near Millen, Georgia, July 1, 1901 (Gray); herb. Drs. A. C. Hexamer & F. W. Maier, wet pine woods, Summerville, South Carolina, May 27, 1855 (Gray); *Hort. Berol.* (Berl.); *Hort. Cantabr.*, 1842 (Gray); *Hort. Lipsiae* (Berl.); *Hort. Paris.*, 1820 (Berl.); Michaux, North America (Berl.); Earl E. Sherff 5003, cult. in *Harvard Univ. Bot. Gard.* (*Hort. Cantabr.*), August 12, 1929 (Field); John K. Small, in and about the Altamaha River Swamp, Liberty County, Georgia, June 18-21, 1895 (Field); J. T. Stewart, near Charleston, South Carolina, June 1, 1865 (Field); K. A. Taylor, pine barren, Summerville, South Carolina, June 10, 1891 (Field).

Coreopsis Delphinifolia var. β *chlooidea* Sherff, Bot. Gaz. 94: 596. 1933.

E specie foliorum segmentis magna ex parte tantum 0.3-2 (nonnullis usque ad 3.2) mm. latis differt.

Type specimen: Collected by *Samuel Bottsford Buckley*, in pine woods, mountains of Alabama (Gray).

Distribution: Georgia and Alabama.

Specimens examined: *Buckley*, in pine woods, etc. (type, Gray); *Roland M. Harper 545*, dry pine barrens, Sumter County, Georgia, August 31, 1900 (Field).

90. *Coreopsis major* Walt. Fl. Carol. 214. 1788. *C. senifolia* Michx. Fl. Bor. Amer. 2: 138. 1803. *C. maior* Walt. ex Ind. Lond. 2: 295. 1930.

Folia simplicia var. ϵ *Oemleri*.

Folia principalia tripartita.

Foliola 1-3 (rarius -5) mm. lata var. δ *linearis*.

Foliola plerumque 5-25 mm. lata.

Foliola plerumque 5-11 mm. lata var. γ *rigida*.

Foliola latiora, plerumque 1-2.5 cm. lata.

Foliola plus minusve pubescentia *C. major* sensu stricto.

Foliola glabra var. β *stellata*.

Herba perennis, e basi horizontali erecta, gracilis, supra suberecte ramosa ramis tenuibus, 5-9 dm. alta, caule ramisque angulatis plus minusve pubescentibus. Folia opposita, sessilia, divaricata vel suberecta, summa simplicia integraque, alia tripartita, segmentis nunc subrhomboideo-ovalibus nunc elliptico-lanceolatis vel etiam lanceolatis (rarissime lineari-lanceolatis), membranaceis, integris, plus minusve pubescentibus, ciliatis, apice obtusis, terminali 4-7 cm. longo et 1.2-2.5 cm. lato, lateralibus plerumque paulo minoribus. Capitula subcorymbosa tenuiter pedunculata pedunculis glabris vel sparsim hispidis saepius 2-8 cm. longis, radiata, pansa ad anthesin 2.7-4 (-5) cm. lata et 7-9 mm. alta. Involucri plus minusve hispidi bracteae exteriores circ. 8, lineari-oblongae, superne saepe dilatatae, apice obtusae, 4-8 mm. longae, interiores ovato-oblongae vel lanceolato-ovatae subaequales. Flores ligulati circ. 8, flavi, ligula oblongo-lineares vel elliptico-oblongi, apice integri vel denticulati, 1.5-2.5 cm. longi. Paleae lineares, supra paulo dilatatae, achaenia multo superantia. Florum tubulorum stylorum rami acriter conici. Achaenia valde obcompressa, elliptico-oblonga vel obovata, subnigra, glabrata, alata alis subbrunneis 0.2-0.7 mm. latis, omnino 4.5-6 mm. longa et 2-4 mm. lata, apice alis productis breviter bidentata vel plurisetosa.

Type specimen: No specimen cited. The remnants of Walter's collection, however, are in London (Brit.).

Distribution: South Carolina and Kentucky southwardly to Georgia and Mississippi.

Specimens examined: *C. F. Baker*, Blount Springs, Alabama, May 5, 1898 (Pom.); *S. B. Buckley*, Alabama, July, 1841 (Mo.); ex *Cambridge Bot. Gard.*, Cambridge, Massachusetts, August, 1845 (Berl.); *A. H. Curtiss* 6471, dry thickets near Stone Mountain, Georgia, June 12, 1899 (Gray); *John Davis* 1855, Stone Mountain, Georgia, June 18, 1921 (Gray; forma foliis glabratis); *A. Dedrick*, dry, sandy soils (Field); *F. S. Earle* 2060, Auburn, Alabama, May 28, 1899 (Field, 2 sheets); *idem* 2061, eodem loco, May 28, 1899 (Pom.); *idem* & *C. F. Baker*, eodem loco, August 17, 1897 (Pom.); *H. Eggert*, Sherwood, Tennessee, June 8, 1897 (Field); ex herb. *Hexamer et Maier*, along fences, Abbeville County, South Carolina, June, 1855 (Gray); *Miss Anna King* 116, dry border of woods, Mammoth Cave, Kentucky, July 2, 1916 (Field); *B. F. Leeds*, Chattanooga, Tennessee, September 29, 1892 (Field); *Dr. Mohr*, Mobile, Alabama (Field); *Philip A. Munz* 1589, dry, open woods, near Montgomery, Alabama, June 10, 1917 (Pom.); *Josephine Skehan* 137, Ocean Springs, Mississippi, June, 1892 (Gray; forma var. *stellatae* adpropinquans); *John K. Small*, alt. 300–420 meters, on northwest slope of Stone Mountain, Georgia, July 3, 1893 (Field); *John Donnell Smith*, grassy pine woods, Orangeburg District, South Carolina, August 9, 1884 (Field).

***Coreopsis major* var. β *stellata* (Nutt.) Robins.** *Rhodora* 10: 68. 1908. *C. stellata* Nutt. *Journ. Acad. Phila.* 7: 76. 1834. *C. senifolia* var. *stellata* (Nutt.) Torr. & Gray, *Fl. N. Amer.* 2: 342. 1843.

Glabra, foliolis plerumque angustioribus, saepe longioribus, saepius rhomboide lineari-lanceolatis, terminali usque ad 1 dm. longo (rarissime monstroseque trifido vel tripartito).

Type specimen: No particular specimen cited.

Distribution: Virginia to southernmost Ohio and southwardly to Florida and Alabama.

Specimens examined: *Anon.* (*Mt. Desert Nurseries*), Bar Harbor, Maine, August, 1906 (Gray); *Samuel M. Bain* 95 p.p., sandy hills, Henderson, Tennessee, July, 1893 (Gray); *H. C. Beardslee* & *C. A. Kofoid*, alt. 900 meters, sandy woods, Swain, North Carolina, August, 1891 (Gray); *Beyrich*, in thickets, Georgia (Berl.); ex *Biltmore Herb.* 175a and b, light soil in upland woods, North Carolina, July 7, 1897 (175a, Field; Gray: 175b, Gray); *J. R. Churchill*, woods, Lookout Mountain, near Chattanooga, Tennessee, June 2, 1911

(Gray); *John Davis 2097*, dry, open woods, Tryon, North Carolina, June 29, 1920 (Gray); *idem 7818*, dry woods, near Anderson, South Carolina, August 30, 1917 (Mo.; forma var. *rigidae* adpropinquans); *A. H. Curtiss*, Bedford County, Virginia, July 1, 1868 (Field); *idem*, eodem loco, June 30, 1871 (Gray, 2 sheets; forma nonnullorum foliorum foliolis tripartitis); *idem*, eodem loco, July 3, 1872 (Field); *idem 1487*, alt. 600 meters, rocky woods. Chilhowee Mountains, Tennessee, June (Berl., 2 sheets; Field); *F. S. Earle & C. F. Baker*, Auburn, Alabama, May 28, 1898 (Field); *George Engelmann*, Norristown, eastern Tennessee, August 27, 1876 (Mo.); *Juliet Fauntleroy 654*, near Huddleston, Virginia, August 9, 1914 (Gray); *Gates*, Alabama (Gray); *Asa Gray & John Carey*, mountains of Virginia and North Carolina, July, 1841 (Gray; var. *rigidae* adpropinquans); *James Hall*, Montgomery County, Alabama, 1828–1834 (Field); *T. G. Harbison*, Waynesville, North Carolina, 1897 (Gray); *idem*, Highlands, North Carolina, 1905 (Gray); *Roland M. Harper 46*, alt. 205 meters, dry oak woods, Athens, Georgia, June 25, 1900 (Berl.; var. *rigidae* adpropinquans); *idem 131*, alt. 205 meters, eodem loco, July 3, 1900 (Gray); *A. Arthur Heller 99*, vicinity of Salisbury, North Carolina, June 21, 1890 (Field, 2 sheets); *idem 1013*, alt. 540 meters, near Hickory, North Carolina, June 23, 1893 (Field; var. *rigidae* adpropinquans); *Hooker*, Kentucky (Berl.); *Hortus Cantabr.*, cult., 1842 (Gray); *idem*, cult., 1873 (Gray); ex *Hort. Lipsiae* (Berl.); *Arthur H. Howell 808*, Anniston, Alabama, June 10, 1913 (U.S.); *F. W. Hunnewell, 2nd*, dry woods, White Sulphur Springs, West Virginia, July 4–6, 1914 (Gray); *T. H. Kearney, Jr.*, White Cliff Springs, Tennessee, July 14, 1894 (Field, 2 sheets); *B. F. Leeds*, Chattanooga, Tennessee, September 29, 1892 (Field, 2 sheets); *E. E. Magee*, Hayward County, North Carolina, September, 1897 (Gray); *idem*, Waynesville, North Carolina, September 9, 1897 (Gray); *idem*, alt. 750 meters, Highlands, North Carolina, September 2, 1902 (Gray); *idem*, eodem loco; below Satulah Mountain, August 2, 1902 (Gray); *E. L. Morris 1050*, alt. 620 meters, shaded river bank near Spanishburg, West Virginia, July 23, 1900 (Field); *Thomas C. Porter*, middle Georgia, 1846 (Gray); *L. F. & Fannie R. Randolph 1066*, dry, sterile soil, edge of woods, southeast of Granite Falls, North Carolina, July 30, 1922 (Gray, var. *rigidae* adpropinquans); *Riddell*, Kentucky (Gray); *Benjamin L. Robinson 79*, Asheville, North Carolina, August 2, 1893 (Berl.; Gray); *F. Rugel*, Florida, 1844 (Gray; Mo.); ex herb. *Margaret P. Russell*, Asheville, North Carolina (Gray); *Albert Ruth*, sandy woods, Knoxville, Tennessee, June, 1893 (Field); *idem*, gravelly soil and rocky places,

Mount Nebo, eastern Tennessee, July, 1893 (Mo., 2 sheets); *idem*, open woodlands, Knoxville, June, 1895 (Berl.); *idem*, woods, Lookout Mountain, Georgia, July 20, 1897 (Gray); *Earl E. Sherff 5007*, cult., Harvard Univ. Bot. Gard., August 12, 1929 (Berl.; Del.; Field); *W. L. Sherwood*, Waynesville, North Carolina, July, 1897 (Gray); *idem*, Tuckasiegee Valley, North Carolina, September 20, 1897 (Gray); *B. Shimek*, Monte Sano, Alabama, July, 1891 (Field); *C. W. Short*, hilly lands, Kentucky (Field); *Howard Shriver*, Wytheville, Virginia, July, 1877 (Berl.; Field); *John K. Small*, alt. 900 meters, on Round Top Mountain, west of Seven Mile Ford, Smyth County, Virginia, July 2, 1892 (Field; Gray); *idem*, alt. 660 meters, on Farmer Mountain, on New River, Carroll County, Virginia, July 12, 1892 (Field); *idem*, alt. 750 meters, Nick's Creek, base of Pine Glade Mountain, Smyth County, Virginia, August 5, 1892 (Field); *idem* & *A. Arthur Heller*, alt. 1,350 meters, Green's Hill, near Blowing Rock Mountain, Watauga County, North Carolina, July 10, 1891 (Field); *idem*, between Cranberry and Linville, North Carolina, July 17, 1891 (Field); *idem*, southern slopes of Grandfather Mountain, North Carolina, July 25, 1891 (Field); *idem*, alt. 1,050 meters, Rocky Knob, near Blowing Rock Mountain, Caldwell County, North Carolina, July 24, 1891 (Field; Gray); *idem 328*, Blowing Rock Mountain, Watauga County, North Carolina, July 29, 1891 (Field, 3 sheets); *idem* (similiter) *328*, eastern slopes of Blowing Rock Mountain, Caldwell County, North Carolina, July 31, 1891 (Field, 3 sheets); *John Donnell Smith*, Warm Springs, Madison County, West Virginia, July 29, 1880 (Field); *idem*, Caesar's Head, South Carolina, July, 1881 (Field); *Roland Thaxter*, Cullowhee, North Carolina, June–July, 1887 (Gray); *S. M. Tracy 9049*, Warm Springs, Georgia, May 20, 1905 (Berl.; Field; Gray); *G. R. Vasey*, northern Alabama, 1878 (Field); *idem*, North Carolina, 1878 (Gray); *William C. Werner 92*, Ironton, Ohio, 1892 (Gray); *Karl M. Wiegand & W. E. Manning 3414*, sandy bank by roadside, 4 miles west of Raleigh, North Carolina, June 27, 1927 (Pom.); *idem 3415*, edge of dry pine woods, 12 miles south of Asheboro, North Carolina, June 30, 1927 (Pom.); *Charles Wright*, northern Georgia (Gray).

***Coreopsis major* var. γ *rigida* (Nutt.) F. E. Boynton in Small, Fl. S. E. United States 1276, 1340. 1903. *C. senifolia* var. *rigida* Nutt. Gen. Amer. 2: 180. 1818. *C. Wrayi* Nutt. Journ. Acad. Phila. 7: 76. 1834. *C. senifolia* Hook. Bot. Mag. 63: pl. 3484. 1836 (non Michx.). *C. Delphinifolia* var. *rigida* (Nutt.) Torr. & Gray, Fl. N.**

Amer. 2: 342. 1843. *C. rigida* Nutt. ex Torr. & Gray, loc. cit.; cf. Ind. Kew. 1: 617. 1895.

Folia rigidula, tripartita, plerumque suberecta, foliolis plerumque lineari-lanceolatis, faciebus saepissime glabris marginibus scabridis, saepius 3–7 cm. longis et 5–11 mm. latis.

Type specimen: No type cited, but habitat was given as Georgia.

Distribution: Virginia and Tennessee southwardly to Georgia.

Specimens examined: *Anon.*, ex Nuttallio ipso, loc. ignoto (Gray, sub nom. *Coreopsiside Wrayi* Nutt.); *Harley Harris Bartlett 1638*, pine barren, vicinity of Thomson, Georgia, July 23, 1909 (Pom.); *William M. Canby*, Florence, South Carolina, July 3, 1878 (Field); *H. Eggert*, dry woods on Yellow River, Gwinne County, Georgia, July 27, 1897 (Mo.); *Roland M. Harper*, sunny, rocky hillside, vicinity of Sawdust, Georgia, June 18, 1927 (Gray; Mo.); *Hort. Cantabr.*, cult., 1849 (Gray); *C. G. Lloyd*, near Rockwood, Tennessee, August 10, 1880 (Field); *C. Mohr*, dry pine woods, Bladon (Bladen), Alabama, July, 1875 (Field); *H. W. Ravenel*, Santee Canal, South Carolina, July, 1846 (Gray); *Albert Ruth*, dry, sandy soil, Chilhowee Gap, Tennessee, July, 1893 (Mo.); *idem*, sandy soil, Knoxville, Tennessee, May, 1896 (Mo.); *H. Shriver*, Wytheville, Virginia, 1875 (Field); *John K Small & A. Arthur Heller*, north of Hickory, North Carolina, June 25–26, 1891 (Field); *Huron H. Smith 2526*, Blue Ridge Mountains, Fannin County, Georgia, July 26, 1909 (Field).

Coreopsis major var. δ *linearis* Small, Bull. Torr. Bot. Club 22: 48. 1895.

Parce inconspicueque pubescens, caule 3–6 dm. alta. Folia tripartita segmentis linearibus, 3–11 cm. longis et 1–3 (rarius –5) mm. latis utrinque acuminatis. Capitula etiam ligulae achaeniaque paulo minora.

Type specimen: Collected by *John Kunkel Small*, at altitude of 300–330 meters, on Little Stone Mountain, DeKalb County, Georgia, July 7, 1893 (N.Y., 2 sheets).

Distribution: South Carolina and Central Georgia.

Specimens examined: *J. K. Small*, Little Stone Mountain, etc. (type, N.Y., 2 sheets); *John Donnell Smith*, grassy pine woods, Orangeburg District, South Carolina, August 9, 1884 (Field; Gray).

Coreopsis major var. ϵ *Oemleri* (Ell.) Britton, Mem. Torr. Bot. Club 4: 131. 1894. *C. Oemleri* Ell. Sketch Bot. S. Carol. & Georgia 2: 435. 1824.

Var. *stellatae* similis sed foliis simplicibus differt.

Type specimen: Collected by *Oemler*, near the junction of the Broad and Saluda rivers, vicinity of Columbia, South Carolina.

Distribution: North Carolina to Georgia.

Specimens examined: None.

Asa Gray (Syn. Fl. N. Amer. 1, pt. 2: 294. 1884) treated this as "the abnormal entire-leaved form" of var. *stellata*. An examination of the specimens at Gray Herbarium shows no material of the "entire-leaved form," however, and it is probable that Gray was guided largely by the inscription on A. H. Curtiss's label for a sheet of normal var. *stellata* at Gray Herbarium. This has the observation, "with simple leaves not uncommon." Gray's treatment was followed essentially by Robinson and Fernald (Gray's New Manual, ed. 7. 838. 1908). It may be noted, too, that Boynton (in Small, Fl. S. E. United States 1276. 1903) made the var. *Oemleri* to include var. *stellata*. Boynton's complete omission of the entire-leaved plants from his description, however, may well lead to the suspicion that he had unintentionally overlooked them. Small (Bull. Torr. Bot. Club 22: 48. 1895) describes "a peculiar state" of *C. major* having "leaves undivided, there being two opposite and entire leaves at each node in place of the normal three-parted ones." Clearly, he referred to plants of var. *Oemleri*. He states further: "It seems to have been first collected by Dr. and Mrs. Britton at Black Mountain Station, North Carolina. Later Mr. Heller secured it near Salisbury, N.C., and last season (1893) I came upon it at the western base of Stone Mountain, Georgia." Apparently the variety is somewhat less distinct than the other varieties of *C. major* (even they, however, pass from one into another by various transitional forms; cf. A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 294. 1884), but seems to bear a relation to its parent species comparable to that of var. *Smithii* to *Coreopsis tripteris*.

91. *Coreopsis tripteris* L. Sp. Pl. 908. 1753; Hook. Bot. Mag. pl. 3583. 1837. *Anacis tripteris* (L.) Schrank in Münch. Math. et Nat. 5: 7 (fide DC. Prodr. 5: 568. 1836). *Chrysostemma tripteris* (L.) Less. Syn. Compos. 227. 1832 (fide DC. loc. cit). *Coreopsis tripteris* var. β Torr. & Gray, Fl. N. Amer. 2: 341. 1843. *Coreopsis tripteris* vars. *Deamii* et *intercedens* Standl. Rhodora 32: 34. 1930.

Folia divisa.

Foliorum segmenta subrhomboidea.....var. γ *subrhomboidea*.

Foliorum segmenta late elliptico-linearia vel anguste oblongo-lanceolata.....*C. tripteris* sensu stricto.

Folia simplicia.....var. β *Smithii*.

Herba perennis, e basi horizontali erecta, plerumque glabra rarius pubescens, plus minusve pallida, 1–3 m. alta, caulibus teretibus summam versus ramosis. Folia opposita, principalia petiolata petiolis 0.5–3 cm. longis, petiolo adjecto 6–12 cm. longa, 3-partita, foliolo mediano saepe rursus 3-partita, segmentis late elliptico-linearibus vel anguste oblongo-lanceolatis, apice acutis vel subobtusis, marginibus aegre revolutis, faciebus glabris vel rarius pubescentibus; folia summa minora, saepe simplicia et subsessilia. Capitula (contusa odorata) subcorymbosa, tenuiter pedunculata pedunculis saepius 3–8 cm. longis, radiata, pansa ad anthesin 3–5 cm. lata et 8–10 mm. alta. Involucri saepius glabri bracteae exteriores circ. 8, oblongo-lineares, obtusae, circ. 2–3 mm. longae, interiores oblongo-ovatae 4–6 mm. longae. Flores ligulati plerumque 7 vel 8, flavi, ligula plus minusve elliptico-oblongi, apice subintegri vel dentati, 1.2–2.4 cm. longi. Paleae filiformes, apicem versus dilatatae, striis purpureis percursae, 5–7 mm. longae. Flores tubulosi primo plus minusve flavi demum brunnei vel purpurei, stylorum ramis apice breviter caudato-appendiculatis. Achaenia brunneo-nigra, obcompressa, faciebus glabra, circumambitu (alis angustis subbrunneis inclusis) cuneato-oblonga vel cuneato-obovata, omnino 5–7 mm. longa et 2.8–4.2 mm. lata, apice emarginato setis minimis erectis munita.

Type specimen: No particular type was cited. The habitat was given as Virginia and the first cited reference was the *Coreopsis foliis subternatis integerrimis* of the Hort. Upsal. 269. Other citations were in the following order: *Rudbeckia foliis compositis integris*, Roy. lugdb. 181; *Chrysanthemum virginianum*, folio acutiore laevi trifoliato f. *anagyridis folio*, Moris. Hist. 3. p. 21. s. 6. t. 3. f. 44; Raj. Suppl. 215.

Distribution: Massachusetts, southern Ontario, and Wisconsin, southwardly to Georgia, Mississippi, western Louisiana, and eastern Kansas.

Specimens examined: *H. C. Beardslee & C. A. Kofoid*, alt. 600 meters, sandy banks, Great Smoky Mountains, Swain County, North Carolina, August, 1891 (Field; Gray); *M. S. Bebb*, Fountaindale, Illinois (Gray); *Florence Beckwith 54*, Dallas City, Illinois, September, 1917 (Field); *H. C. Benke 1841*, Elgin, Illinois, September 8, 1916 (Field); *Biltmore Herb. 173a*, moist grounds and bordering streams, Biltmore, North Carolina, August 1, 1897 (Gray; Pom.); *O. W. Blakley 3420*, open woods near Page, Oklahoma, August 27, 1914 (Mo.); *J. W. Blankinship*, Greene County, Missouri, September 7, 1888 (Gray); *Fred W. Brendel*, Peoria, Illinois (Field); *A. B. Burgess 433*, railroad bank, Flowerfield, Michigan, September 30,

1903 (Field); *idem* 513, shrubbery at roadside, Portage, Michigan, October 5, 1903 (Field); *W. W. Calkins* 135, prairie, Berwyn, Illinois (Field); *idem* 145, common, Berwyn, Illinois, August 26, 1907 (Field); *S. H. & D. R. Camp*, dry ground, Jackson County, Michigan, August 18, 1897 (Field); *idem*, Jackson County, Michigan, August 18, 1898 (Field); *Agnes Chase*, open woods, Rogers Park, Illinois, August 27, 1896 (Field); *Virginus H. Chase*, dry prairie north of Wady Petra, Illinois, August 12, 1896 (Field); *J. R. Churchill*, shore of Lake Michigan, Indiana, September 4, 1893 (Pom.); *John Davis*, near LaGrange, Missouri, June 9, 1915 (Mo.); *C. C. Deam & H. A. Gleason*, dry upland woods, Bluffton, Indiana, September 1, 1904 (Gray); *Arthur DeSelm* 499, highways south of Tucker, Illinois, August 7, 1913 (Field); *idem* 621, highway near Kankakee, Illinois, September 7, 1913 (Field); *W. M. Dick*, Lorain County, Ohio, July 31, 1895 (Gray); *S. S. Dickey* 96, dry roadside, Warren County, Pennsylvania, August 25, 1923 (Gray); *Charles K. Dodge*, near Port Huron, Michigan, August 4, 1895 (Field); *C. W. Duesner*, Miller, Indiana, 1908 (Field); *F. S. Earle*, creek bottoms, Auburn, Alabama, September 4, 1899 (Field); *H. Eggert*, prairie and dry hills, St. Louis, Missouri, August 25, 1874 (Gray); *idem*, woods, St. Louis, Missouri, August 23, 1887 (Gray); *idem* 122, central United States, August 30, 1875 (Berl.); *James Galen* 4289, woods and thickets, eastern United States, 1883 (Gray); *Frank C. Gates* 808, Edgewater, Illinois, August 23, 1905 (Field); *idem* 10104, prairie, Carthage, Illinois, September 15, 1916 (Field); *H. A. Gleason*, in strip of original prairie, east of Rantoul, Illinois, October 5, 1907 (Gray); *idem* 812, prairie soil along roadsides, southwest of Dalton City, Illinois, August 22, 1899 (Gray); *idem* 1813, dry upland woods, Grand Tower, Illinois, August 28, 1900 (Gray); *idem* 1977, prairie, Illinois, September 4, 1900 (Gray); *idem* 2753, dry upland woods, Herod, Illinois, August 23, 1902 (Gray); *Grassly*, Miller, Indiana, August 31, 1880 (Field); *J. M. Greenman* 544, Tygart Junction, West Virginia, September 24, 1904 (Field; Gray); *idem* 3991, Webster Grove, Missouri, September, 1920 (Mo.); *Dr. Hale*, Louisiana (Gray); *Elihu Hall*, barrens, etc., Athens, Illinois, 1861 (Field; Pom.); *idem*, eodem loco, August, 1864–1867 (Field); *idem*, eodem loco, August, 1868 (Field); *Roland M. Harper* 1954, alt. 50 meters, bank of Flint River, near Albany, Georgia, August 27, 1903 (Berl.; Field; Gray); *A. A. Heller*, vicinity of Salisbury, North Carolina, August 21, 1890 (Field); *idem*, near mouth of Tucquan Creek, Lancaster, Pennsylvania, September 1, 1890 (Gray); *idem & E.*

Gertrude Halbach, near McCall's Ferry, Pennsylvania, September 9, 1893 (Field); *A. A. & E. G. Heller 4129*, alt. 90 meters, near Texarkana, Arkansas, August 23, 1898 (Field; Gray); *Albert S. Hitchcock*, wet ground, Iowa City, Iowa, 1888 (Calif.); *Hort. Bero-linensis*, cult., September 11, 1876 (Berl.); ex *Hort. Goetting.* (Berl.); *Hort. Lipsiae*, cult. (Berl.); *Hort. Bot. de l'Ecole de Médecine de Paris*, August, 1820 (Berl.); *J. W. Huett*, Ottawa, Illinois (Gray); *T. H. Kearney, Jr. 553*, Clear Creek, Bell County, Kentucky, September, 1893 (Field; Gray; Pom.; etiam in Field qua varietati *Smithii* adpropinquans); *Miss Anna King 534*, dry banks or in prairie land, Glenwood, Illinois, September 20, 1918 (Field); *eadem 566*, dry soil in thickets of waste field, eodem loco, September 20, 1918 (Field); *W. Krebs*, Cleveland, Ohio (Berl.); *O. E. Lansing, Jr. 428*, open woods, Chicago, Illinois, August 14, 1898 (Field); *idem 647*, prairie land, West Pullman, Illinois, July 27, 1899 (Field); *idem 1646*, sandy woods near dunes, near Porter, Indiana, September 16, 1902 (Field); *idem 2832*, border of oak woods, Gibson, Indiana, August 13, 1910 (Field; Gray); *idem 3822*, sandy roadsides, Starved Rock, Illinois, September 7-8, 1914 (Field); *idem 3911*, open, sandy woods, Pine, Indiana, August 22, 1915 (Field); *Ray N. Lloyd*, Ravenswood, Illinois, August 31, 1887 (Field); *John Macoun*, thickets, Sandwich, Ontario, August 4, 1892 (Gray); *F. E. McDonald*, open, dry woods, Peoria, Illinois, August, 1900 (Field); *idem*, eodem loco, September, 1901 (Field); *idem*, frequent in rich woods, eodem loco, August, 1904 (Gray); *Michaux*, North America (Berl.); *Charles F. Millspaugh 3865*, railroad ditch, Lakeside, Berrien County, Michigan, September, 1914 (Field); *W. S. Moffatt 492*, thickets, Pine, Indiana, August 31, 1895 (Field; Gray); *Albert Hanford Moore 2552* and *2553*, sandy east bank of Tygart's Valley River, near Tygart Junction, West Virginia, September 24, 1904 (Gray); *E. L. Moseley*, Oxford, Ohio, August 21, 1895 (Field); *L. H. Pammel 621*, Ames, Iowa, September 10, 1897 (Gray); *H. N. Patterson*, dry bluffs, Henderson County, Illinois, August, 1871 (Field); *Donald C. Peattie 164*, sandy fields, Tremont, Indiana, August 13, 1920 (Field); *idem 2029*, Griffith, Indiana, August 15, 1925 (Field); *Thomas C. Porter*, banks and islands of Susquehanna River, Lancaster County, Pennsylvania, August 22, 1861 (Gray); *Miss Carrie A. Reynolds*, Stony Island, Illinois, August 24, 1909 (Field); *Riddell*, Ohio (Gray); *Robert Ridgway 60*, Olney, Illinois, September 7, 1917 (Field); *Benjamin L. Robinson*, rich prairie soil, Hendrix, Illinois, August 31, 1904 (Gray); *idem 56*, Bloomington, Illinois, September, 1893 (Berl.);

F. Rugel, in valley of Blue Ridge Mountains, North Carolina, August, 1841 (Berl.); *Albert Ruth 69*, woods, Lookout Mountain, Georgia, July 19, 1897 (Gray); *H. P. Sartwell*, Maumee River, Ohio (Field); *Earl E. Sherff 1038*, near Jefferson Barracks, Missouri, August 11, 1910 (Field); *John K. Small*, north of Marysville, Pennsylvania, August 15, 1888 (Field); *idem*, vicinity of mouth of Tucquan Creek, Lancaster County, Pennsylvania, September 1, 1890 (Field); *idem*, eodem loco, October 11, 1890 (Field); *idem*, alt. 480 meters, in canyon at Tallulah Falls, Rabun County, Georgia, August 4, 1893 (Field); *idem*, alt. 900 meters, about Estatoah Falls on Mud Creek, Rabun County, Georgia, August 12, 1893 (Field); *idem & A. A. Heller 100*, vicinity of Faith Post Office, North Carolina, August 14, 1891 (Field); *Frank Thone 232*, Starved Rock, Illinois, May–September, 1921 (Field); *S. M. Tracy 8670*, Taylorville, Mississippi, August 20, 1903 (Field; Gray); *L. M. Umbach*, woods, Clarke, Indiana, August 28, 1897 (Field); *idem*, eodem loco, August 20, 1898 (Field); *G. R. Vasey*, Lookout Mountain, Tennessee, 1878 (Field); *L. F. Ward*, Potomac flats, Maryland, August 12, 1877 (Field); *Roscoe J. Webb*, dry soil, Pippin Lake, Portage County, Ohio, September 6, 1909 (Gray); *E. F. Williams*, vacant lots, Boston, Massachusetts, September 3, 1903 (Gray); *Wilbur H. Wright 221*, Chicago, Illinois, August 22, 1908 (Field).

A tall species of attractive appearance and wide distribution over the eastern and central United States. Commonly glabrous, but at times becoming more or less pubescent. Torrey and Gray (Fl. N. Amer. 2: 341. 1843) designated a pubescent form ("leaves minutely scabrous-puberulent. . . . Western Louisiana, Dr. Veatch") as "var. β ." During the four decades following, however, Asa Gray had many opportunities to see the inconstancy of the pubescence character in *C. tripteris*. Hence, in his *Synoptical Flora of North America* (1, pt. 2: 294. 1884) he modified the description of *C. tripteris* from "smooth and glabrous" to read "smooth and glabrous, or leaves minutely pubescent." Some years ago I myself, in a purely tentative way, treated the pubescent extremes as constituting a variety, which variety was set off with a proper name in my manuscript. With the examination of hundreds of herbarium and field specimens, however, it became apparent that the pubescence character was too capricious to admit of utilization, and that Gray's reduction of a variety thus segregated, to synonymy, would needs be accepted. Recently Standley (loc. cit.), apparently overlooking the treatments by Torrey and Gray and by Gray, has

described the var. *Deamii* to include forms with leaves pubescent at least underneath and involucre hairy; also the var. *intercedens* to include forms with leaves pubescent at least underneath and involucre glabrous.

Coreopsis tripteris var. β *Smithii* Sherff, Bot. Gaz. 88: 301. 1929.

E specie foliis omnibus vel fere omnibus integris, lamina tenuiter oblongo-lanceolata differt.

Type specimen: Collected by *John Donnell Smith* in low, open woods near Montgomery, Alabama, August 26, 1885 (Field).

Distribution: Kentucky and Arkansas, southwardly to Florida, Georgia, and Mississippi.

Specimens examined: Ex herb. *A. W. Chapman*, Georgia (Mo.); *T. H. Kearney, Jr.*, along Clear Creek, Bell County, Kentucky, September, 1893 (Field); *George V. Nash 2585*, River Junction, Gadsden County, Florida, September 5, 1895 (U.S.); *E. J. Palmer 8468*, moist, open ground, Malvern, Arkansas, September 4, 1915 (Mo.); *Charles Louis Pollard 1222*, Waynesboro, Mississippi, August 8-9, 1896 (Field); *John Donnell Smith*, low, open woods, etc. (type, Field; cotypes, Gray; Mo.).

According to Smith's additional note on the type sheet, Asa Gray had pronounced this plant a new variety of *Coreopsis tripteris* and, in a letter written in November, 1885, had given it a varietal name. While Gray would probably have published the name had he not died shortly afterward, his proposed name was passed over by me in accordance with the recommendations of the Vienna Rules (Recomm. XIV. e) and the variety named in honor of the type collector.

Coreopsis tripteris var. γ *subrhomboidea* Sherff, Bot. Gaz. 88: 303. 1929.

Folia tripartita foliolis lateralibus lanceolatis terminali rhomboideo-lanceolato 1.7-2.3 cm. lato, petiolo adjecto 6-8 cm. longa. Capitula minora, acheniis tantum 4-4.5 mm. longis.

Type specimen: Collected by *Ernest Jesse Palmer*, No. 29421, sandy, open woods bordering bog, near Texarkana, Bowie County, Texas, October 27, 1925 (Gray).

Distribution: Known only from type locality in Bowie County, Texas.

Specimens examined: *Palmer 29421* (type, Gray).

In the more than two hundred collections of the species proper studied by me, all the leaflets were variously linear, oblong-linear, or narrowly oblong-lanceolate, and the achenes were commonly 5–6 mm. long. In the Palmer plant the terminal leaflets approach very distinctly a rhombus in outline and the achenes are smaller, measuring only about 4–4.5 mm. in length.

92. *Coreopsis latifolia* Michx. Fl. Bor. Amer. 2: 137. 1803. *Leiodon latifolium* (Michx.) Shuttl. Distrib. Rugelii Pl., Herb. Berol., etc.

Herba perennis, erecta, gracilis, glabra vel pubescens, 1–1.5 m. alta, summam versus erecte ramosa, foliosa usque vel fere usque ad summam. Folia opposita, subsessilia vel brevi-petiolata, omnino plerumque 1–2.3 dm. longa et 4–10 cm. lata, valde membranacea, ovata vel ovalia, basi late cuneata apice graciliter acuminata, margine ciliata ac serrata dentibus mucronatis. Capitula pauca vel numerosa, paniculato-corymbosa, tenuiter pedicellata pedicellis 2–10 cm. longis, radiata, pansa ad anthesin ± 4 cm. lata et ± 1.2 cm. alta. Involucri bracteae exteriores 6–9, perspicue herbaceae, lineari-oblongae, apice obtusae, patentes, 6–8 mm. longae; interiores oblongae, apicem versus abrupte angustatae, paulo longiores. Flores ligulati 4 vel 5, flavidi, ligula elliptico-oblongi, apice integri vel paululum dentati, circ. 1.5–1.8 cm. longi. Paleae lineares, obtusae, ± 8 mm. longae. Flores tubulosi pauci (circ. 12), flavidi vel demum parce brunnei, stylosum ramis ad apicem conicis. Achaeonia obcompressa, oblongo-lanceolata, exalata, apice angusto truncata ac calva, circ. 7 mm. longa.

Type specimen: Collected by *André Michaux* at higher altitude in the Carolina Mountains (Par.).

Distribution: North Carolina southward to Georgia.

Specimens examined: *Anon.*, mountains of North Carolina, September, 1843 (Gray); *Biltmore Herb. 5374b*, slopes of Craggy Mountain, Buncombe County, North Carolina, August 12, 1897 (Gray; N.Y.); *Buckley*, mountains of Carolina (Gray) and Georgia (N.Y.); herb. A. W. *Chapman*, mountains of Georgia (N.Y.); *Asa Gray*, Hickory Nut Gap, southeastern United States, 1843 (N.Y.); *idem & W. S. Sullivant*, mountains of Carolina, 1843 (Gray); *Harvard Univ. Bot. Gard.*, cult. anno 1849 e sem. e plantis in montibus Carolinae lectis (Gray); *Hort. Berol.*, cult. (Berl.); *F. Rugel*, on summits of mountains, Broad River, North Carolina, July, 1841 (Berl.; N.Y.; appellata *Leiodon latifolium* Shuttl.).

93. *Coreopsis tinctoria* Nutt., Journ. Acad. Phila. 2: 114. 1821. *Calliopsis bicolor* Reichenb. Mag. Aesthet. Bot. pl. 70. 1823. *Diplosastera tinctoria* (Nutt.) Tausch, Hort. Canalius fasc. 1, icon. et descript. 1823. *Calliopsis tinctoria* (Nutt.) DC. Prodr. 5: 568. 1836. *Coreopsis tinctoria* var. β *atropurpurea* Hook. Bot. Mag. pl. 3511. 1836. *Coreopsis elegans* Hort. fide Sieb. & Voss, Vilmor. Blumeng. ed. 3. 1. 487. 1894.

Among the numerous illustrations of this widely cultivated species we may cite the following: Bart. Fl. Amer. Sept. pl. 45. 1822; J. Radius, Schrift. Naturforsch. Gesellsch. Leipz. 1: pl. 4. 1822; Bot. Mag. pl. 2512. 1824; Bot. Reg. pl. 846. 1824; Sweet, Brit. Flow. Gard. 1: pl. 72. 1824.

Capitula pansa ad anthesin 2-3 cm. lata, achaeniis 1.2-4 mm. longis.

C tinctoria sensu stricto.

Capitula pansa ad anthesin 1-1.5 cm. lata, achaeniis 0.9-1.4 mm. longis.....var. β *imminuta*.

Herba annua, erecta, glabra, 6-12 dm. alta, caulibus subtetragonis vel subteretibus, foliosis, multo ramosis ramis plus minusve angulatis. Folia opposita, subsessilia vel breviter petiolata, saepius 5-10 cm. longa, 1-2-pinnata vel summa indivisa, segmentis (vel laminis) anguste linearibus vel lineari-lanceolatis. Capitula numerosa, subcorymbosa, tenuiter pedunculata pedunculis (pedicellis) plerumque 4-10 cm. longis, radiata, pansa ad anthesin 2-3 cm. lata et 4-6 mm. alta. Involucri glabri bracteae exteriores circ. 8, plus minusve biseriales atque inter se imbricatae, lineari-oblongae vel saepius triangulatae, lateribus plerumque scariorae, ± 2 mm. longae; interiores deltoideo-ovatae vel oblongo-ovatae, circ. 5-6 mm. longae. Flores ligulati circ. 7 vel 8, inferne brunneo-rubri, alibi flavi, ligula obovati, apice plerumque 3-lobati, 0.7-1.5 cm. longi. Paleae subfiliformes, superne coloratae atque angustatae, apice acutae, demum circ. 4-4.5 mm. longae. Flores tubulosi atro-rubri, stylorum ramis apice obtusis. Achaenia lineari-oblonga vel deorsum paulo angustata, valde obcompressa, glabra vel glabrata, exalata, nigra, apice calva, nunc vix 1.2 nunc etiam 3-4 mm. longa.

Type specimen: Collected by *Thomas Nuttall*, in flooded meadows on banks of Red River, Arkansas. Should be in London (Brit. or Kew). I have seen an authentic, fully labeled cotype (Berl.).

Distribution: Minnesota, Saskatchewan, and Washington southwardly to Louisiana, Texas, and California; cultivated everywhere for ornament and escaping frequently. Apparently becoming established at various places in China.

Specimens examined: *Anon.* 575, Fort Gibson, Arkansas, June, 1835 (Berl.); *Carrie Barker* 31, low ground, Tonkawa, Oklahoma, June 27, 1908 (Field); *J. M. Bates* 2958, Red Cloud, Nebraska, July 20, 1903 (Gray); *Robert Bebb* 1174, sandy soil, Galveston, Texas, May 18, 1903 (Field); *H. C. Benke* 327, Hutchinson, Kansas, October 5, 1918 (Field); *idem* 4306, Clifton, Kansas, June 22, 1926 (Field); *idem* 4657, Murphysboro, Illinois, July 6, 1928 (Field); *Katharine Brandegee*, Redstone Park, California, July 25, 1905 (Calif.); *N. L. Britton*, Norfolk, Virginia, June 10, 1892 (Field); *B. F. Bush* 159, Sheffield, Missouri, June 27, 1895 (Berl.); *idem* 3017, introduced, Sugar Creek, Missouri, June 22, 1905 (Gray); *George D. Butler* 14, sulphate flats, fields, and roadsides, north of Limestone Gap, Oklahoma, June 18, 1877 (Field); *William M. Canby* 157, plains of Manitoba, Canada, August 7, 1897 (Gray); *Harley P. Chandler* 7010, Rio Hondo, Texas, July, 1913 (Berl.; Gray); *H. C. Cheo & W. F. Wilson* 11 p.p., Mo Kan Shan, Province of Chekiang, China, June 19, 1926 (Gray); *idem* 29, cult., eodem loco, June 28, 1926 (Calif., 2 sheets; Gray); *Mr. & Mrs. J. Clemens* 978, Leon Springs, Texas, May 29, 1911 (Pom.); *Fred Clements* 2778, Spencer, Nebraska, July 25, 1893 (Gray); *Royal A. Dixon* 17, Huntsville, Texas, June 3-12, 1908 (Field); *R. R. Dreisbach* 1042, escaped, ash dumps, Olney, Pennsylvania, July 15, 1922 (Field); *Drummond*, Texas (Gray); *George Engelmann*, cult., St. Louis, Missouri, September, 1850, e sem. neo-mexicanis a Fendler ad Santam Fe. lectis (Mo.); *Henry Engelmann* (*Captain Simpson's Expedition*), Fort Laramie, July, 1858 (Mo.); *B. W. Everman*, Lake Pend d'Oreille, Idaho, August 7, 1893 (Field); *August Fendler* 397 pro parte, prairie hollows near Pawnee Fork, New Mexico, September, 1847 (Mo.); *Emily F. Fletcher*, Westford, Massachusetts (Gray); *Dr. Hale*, Louisiana (Gray); *Elihu Hall* 344 pro parte, wet places, Hempstead, Texas, May 28, 1872 (Pom., 3 sheets); *idem* 345, eodem loco, June 3, 1872 (Field); *F. L. Harvey*, bluffs, Little Rock, Arkansas (Mo.); *Heiland*, cult., Lychen, Province of Brandenburg, Germany, August 16, 1882 (U.S.); *A. Arthur Heller* 11752, along railroad south of Redding, California, August 30, 1914 (Field; Gray); *Albert S. Hitchcock* 279 and 666, buffalo wallows, Pawnee County, Kansas, August 19, 1895 (Gray); *idem* 13943, savanna, Schofield Barracks, Leihua, Island of Oahu, Hawaiian Islands, July 5, 1916 (U.S.); *Hooker*, Arkansas (Berl.); *Hort.* Paris., 1823 (Berl.); *Marcus E. Jones* 29474, north of Corpus Christi, Texas, March 30, 1932 (Pom.); *W. W. Jones* 227, Middle Verde, Arizona, July 12, 1922 (Gray); *J. B. Leiberg*, moist places, Kootenai County, Idaho, June, 1890

(Field); *idem*, shores of Lake Pend d'Oreille, Idaho, July, 1892 (Field); *F. Lindheimer* 102 p.p., prairies, Galveston Island, Texas, 1843 (Berl.; Gray); *idem* 548, rocky places, New Braunfels, Texas, May, 1851 (Berl., 2 sheets); *idem* 897, Texas, May, 1851 (Berl., forma multis achaeniis tuberculatis); *John Macoun*, Winnifred, Assiniboia, August 12, 1895 (Gray); *idem* 38, Red Deer Lakes, Canada, July 22, 1879 (Gray); *F. E. McDonald*, along roadsides near East Peoria, Illinois, July, 1919 (Field); *Albert Hanford Moore* 1832, escaped, in dump by Lake Anthony, Cottage City, Massachusetts, July 16, 1904 (Gray); *Nealley*, Chenates, western Texas, 1889 (Field); *J. C. Nelson* 1802, waste ground, Salem, Oregon, July 30, 1917 (Gray); *J. B. Norton* 1455, cult., alt. 300–900 meters, Kuliang Hills, near Foochow, Province of Fukien, China, July–August, 1919 (U.S.); *Thomas Nuttall*, flooded meadows, etc. (cotype, Berl.); *E. J. Palmer*, cherty barrens, Newton County, Missouri, July 15, 1906 (Gray); *idem* 2272, cherty barrens, Joplin, Missouri, June 19, 1909 (Gray); *J. C. Parlin*, North Berwick, Maine, July 4, 1892 (Gray); *Dr. Pitcher*, Arkansas (Gray); *Birdie T. Powell*, Hastings, Nebraska, July, 1886 (Field); *J. T. Rothrock*, cult., Philadelphia, Pennsylvania, June 25, 1877 (Field); *idem* 317, alt. 1,500 meters, Arizona, July, 1874 (Field; Gray); *T. E. Savage*, *J. E. Cameron*, & *F. E. Lenocker*, Spokane, Washington, July, 1898 (Field); *idem*, The Dalles, Oregon, August, 1898 (Field); *A. K. Schindler* 335, alt. 1,100 meters, Lu-shan, Kuling Mountains, Kiangsi, China, July–August, 1908 (Berl.); *J. H. Schuette*, cult., Green Bay, Wisconsin, September 14, 1888 and August 23, 1897 (Field); *idem*, cult., eodem loco, July 31, 1901 (Gray); *idem*, cult., eodem loco, August 2, 1901 (Field; forma); *E. P. Sheldon*, Pike Island, Minnesota, July, 1895 (Pom.); *Sherff* 250 pro parte, cult., St. Louis, Missouri, July 6, 1910 (Field); *idem* 499, cult., eodem loco, July 16, 1910 (Field); *idem* 507, cult., eodem loco et tempore (Field; Gray); *idem* 5000, cult., Chicago, Illinois, July 3, 1929 (Berl.; Calif.; Field; ligulis supra brunneo-rubris infra plus minusve flavis); *idem* 5000a, eodem loco et tempore (Berl.; Brit.; Calif.; Field; Kew; Mun.); *B. Shimek*, Oklahoma City, Oklahoma, July, 1892 (Field); *G. W. Stevens* 784, waste place along roadside, Cleo, Oklahoma, June 8, 1913 (Gray); *idem* 1212, waste place, Mountain Park, Oklahoma, June 23, 1913 (Gray); *A. N. Steward* 1510, Kikungshan, Province of Honan, China, July 23, 1925 (Calif.); *Tang Chung Chang* & *Nong Sing Po* 3790, campus of Fukien Christian University, Foochow, Province of Fukien, China, June 8, 1926 (Calif.); *W. F. Thurrow*, Hockley, Texas, 1890 (Field); *To Kang Peng*, *Ts'ang Wai Tak*, & *Ts'ang Un Kin* 936 (Canton Christian

College No. 12935), Shiu-chau, Province of Kwangtung, China, July 18, 1924 (Calif.); *S. M. Tracy 7902*, Weatherford, Texas, May 26, 1902 (Berl.; Field; Gray); *L. M. Umbach 2752*, waste ground, Clyde, Illinois, July 14, 1900 (Gray); *Van Hermann 2686*, cult., vicinity of Santiago de las Vegas, Province of Havana, Cuba, May 16, 1905 (Calif.; Field; Gray); *L. F. Ward*, Ford County, Kansas, October 5, 1897 (Gray); *Mark White 218*, Summer County, Kansas, June 17, 1899 (Mo.); *Charles Wright 339* and *341*, western Texas, May–October, 1849 (Gray); *Cyril Zeller*, Ellis County, Kansas, 1908–1911 (Mo.).

A species often confused with *C. basalis* var. *Wrightii* and with *C. Atkinsoniana*. From both it is at once distinguished by its almost oblong, entirely wingless achenes. In cultivation, plants occur with the rays reddish-brown or brownish-red almost or quite throughout. These are the var. *atropurpurea* of Hooker. At times their rays are distinctly yellow on the under surface and brownish-red above.

Coreopsis bicolor Bosse ex Buchenau (Linnaea 25: 630. 1853, nomen) doubtless belongs with *C. tinctoria*.

Coreopsis tinctoria var. β *imminuta* Sherff, Bot. Gaz. 94: 594. 1933.

Capitula pansa ad anthesin 1–1.5 cm. lata, bracteis exterioribus ± 1 mm. interioribus circ. 5–6 mm. longis, acheniis 0.9–1.4 mm. longis.

Type specimen: Collected by *John Michael Holzinger*, Santa Fe, New Mexico, August 13, 1911 (Mo.).

Distribution: Known only from type locality of Santa Fe, New Mexico.

Specimens examined: *J. M. Holzinger*, Santa Fe, New Mexico (type, Mo.).

94. *Coreopsis basalis* (Dietr.) Blake, Proc. Amer. Acad. 51: 525. 1916. *Calliopsis basalis* Dietr. in Otto & Dietr. Allgem. Gartenzeit. 3: 329. 1835. *Coreopsis diversifolia* Hook. Bot. Mag. pl. 3474. 1836 (nec alior.). *Calliopsis Drummondii* D. Don in Sweet, Brit. Fl. Gard. ser. 2. 4: pl. 315. 1838. *Coreopsis Drummondii* (D. Don) Torr. & Gray, Fl. N. Amer. 2: 345. 1843. *Coreopsis Drummondii* var. β Torr. & Gray, loc. cit. *Coreopsis picta* Hort. fide Sieb. & Voss, Vilmor. Blumeng. ed. 3. 1: 487. 1894.

Foliorum segmenta linearia vel vix lanceolato-linearia.

var. β *Wrightii*.

Foliorum segmenta nunc lineari-lanceolata nunc elliptico-oblonga vel quidem orbiculata.....*C. basalis* sensu stricto.

Herba annua, erecta, ramosa, nunc fere glabra nunc pilis pluri-articulatis valde hispida vel tomentosa, 2-4 dm. alta, caulibus ramisque angulatis ac sulcatis. Folia opposita, petiolata petiolis 1-5 cm. longis, petiolo adjecto usque ad 12 cm. longa, principalia 1-3-pinnata segmentis lineari-lanceolatis vel elliptico-oblongis vel quidem orbiculatis, membranaceis, undulato-integris, apice obtusis vel raro acutis. Capitula ramos (terminaliter per 5-15 cm. plerumque nudos) terminantia, radiata, pansa ad anthesin 3-4.5 cm. lata et \pm 8 mm. alta. Involucri bracteae exteriores 8-10, saepe patentis, subulatae vel lineari-lanceolatae, apice plerumque acutae, marginibus plus minusve hispidio-ciliatae, tergo longitudinaliter plerumque 3-vittatae, 5-9 mm. longae, quam interiores ovatae glabrae paulo breviores. Flores ligulati circ. 8, magna ex parte flavi sed ad basim brunneo-rubri, ligula cuneate ac late obovati, 1.3-2.3 cm. longi, apice 3-lobati lobo mediano rursus 2- (raro 3-) lobulato. Paleae angustissime lineares, demum contortae et bracteas interiores subaequantes. Flores tubulosi saltem superne atro-rubri, stylorum ramis apice obtuso-conicis. Achaenia obovata, tergo convexo nigra ac valde papillata, marginibus incurvatis incrassata cartilagineaque, 1.4-1.8 (-2) mm. longa, apice calva.

Type specimen: Cultivated in Berlin Botanical Garden from seed said to have come from Missouri. If "Missouri" is correct, then the plants there must have been likewise in cultivation, since the species is known in the spontaneous state only in Texas.

Distribution: Native to Texas. Sometimes cultivated for ornament and hence occasionally found elsewhere as an escape.

Specimens examined: *E. R. Bogusch* 994, Gonzales County, Texas, June 6, 1926 (Pom.); *Mrs. Charles C. Deam* 1864, near Lake Helen, Florida, April 26, 1906 (Gray); *T. Drummond* 69 (commun. Hooker anno 1835), Rio Brassos (Brazos River), Texas (Gray); *idem* 200 (commun. Hooker anno 1835), Texas (Gray); *E. H. Eames* 8839, waste ground, Fairfield, Connecticut, August 6, 1914 (Gray); *Elihu Hall*, Hempstead, Texas, June, 1872 (Field); *idem* 343, sandy prairie, eodem loco, May 2, 1872 (Field; Gray; Mo.; N.Y.; Pom., 2 sheets); *Harvard Univ. Bot. Gard.*, cult., 1844 (Gray); *Hort. Berol.*, July, 1837 (Berl., 2 sheets); *J. F. Joor*, open hills on Galveston Bay, Texas, June (Mo.); *John H. Kellogg*, cult. in Missouri Bot. Gard., June 30, 1905 (Mo.); *F. Lindheimer*, Galveston Island, Texas, November, 1842 (Mo.); *idem*, Texas, 1849 (Mo.); *idem* 54, Mill

Creek, Texas, April–May, 1844 (Mo.); *idem* 101, on dunes, Galveston Island, May, 1843 (Calif.; Field; Gray; Mo., 3 sheets; N.Y.); *B. Mackensen* 76, San Antonio, Texas, May 10, 1911 (Field); *Mänz* 29, Victoria, Texas (Berl.); ex herb. *C. Mohr*, damp meadows near coast, eastern shore of Mobile Bay, Alabama, April, 1868 (Field); *E. J. Palmer* 7740, nearly pure sand, Liberty, Texas, May 22, 1915 (Mo.); *J. Reverchon*, White Creek, Brazos, Texas, July 4 (Berl.); *J. Schneck*, La Grange, Texas, May, 1894 (Field); *J. H. Schuette*, cult., Green Bay, Wisconsin, September 14, 1888 (Field); *Earl E. Sherff* 498, cult., St. Louis, Missouri, July 16, 1910 (Field); *idem* 5015, cult., Harvard Univ. Bot. Gard., August 12, 1929 (Berl.; Brit.; Calif.; Field; Kew; Mun.); *idem* 5018, eodem loco et tempore (Field; Del.; Mo.; Mus.V.; U.S.); *W. F. Thurrow*, Hockley, Texas, 1890 (Field); *S. M. Tracy* 8550, Cameron, Louisiana, July 6, 1903 (Field; Gray; Mo.); *idem* 8925 p.p., Victoria, Texas, April 27, 1905 (Berl.; Field; Gray; N.Y.); *S. R. Warner*, Willis, Texas, June 1 (Mo.); *Charles Wright*, Texas (Gray).

Coreopsis basalis var. β *Wrightii* (A. Gray) Blake, Proc. Amer. Acad. 51: 526. 1916. *C. Drummondii* var. *Wrightii* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 291. 1884; cf. (typo) A. Gray, Pl. Wright. 2: 90. 1853; cf. etiam (descriptione sine typo vel nomine) A. Gray, Pl. Wright. 1: 109. 1852.

E specie tantummodo foliorum segmentis linearibus vel vix lanceolato-linearibus, capitulis paulo minoribus differt.

Type specimen: Collected by *Charles Wright*, rocky hills on the San Pedro, western Texas, 1849 (Gray). Gray's name and description (Syn. Fl. N. Amer. loc. cit.) rest upon the variety given in Pl. Wright. 2: 90. 1853. The treatment in that work, however, gives first the reference to Pl. Wright. 1: 109. 1852, concerning a plant collected by Wright in western Texas, in 1849; and, second, the citation of *Wright* 1237, collected on prairies of the Leona and Nueces, Texas, May, 1851. Fortunately the two collections were identical.

Distribution: Widely distributed across Texas and reaching westwardly into New Mexico.

Specimens examined: *B. F. Bush* 696, common in sand, Dallas, Texas, May 10, 1900 (Mo.); *George L. Fisher* 5007, Houston, Texas, May 13, 1917 (U.S.); *B. H. A. Groth* 66, limestone hills near Bracken, Texas, July 8, 1903 (Field; Gray); *A. A. Heller* 1730, alt. 480–600 meters, Kerrville, Texas, May 7–14, 1894 (Field; Gray; Mo.); *Hort. Cantabr.*, cult. anno 1852 e sem. a *C. Wrightio* lectis (Gray);

G. Jermy 657, Iron Creek, Gillespie, Texas (Field; Mo.); *Marcus E. Jones* 28012, west of Uvalde, Texas, April 26, 1931 (Pom.); *idem* 28013, east of Carisso Spring, Texas, April 27, 1931 (Pom.); *E. J. Palmer* 12115, rocky hills, San Marcos, Texas, July 1, 1917 (Mo.); *J. Reverchon*, western Texas, 1882 (Gray); *Miss Ellen D. Schulz* 367, Austin, Texas, July, 1920 (U.S.); *Charles Wright*, Texas (Gray); *idem* 217, New Mexico, 1851 (Gray); *idem* 1237, prairies of the Leona and Nueces, western Texas, May, 1851 (Gray; Mo.; N.Y.; U.S.).

95. *Coreopsis rosea* Nutt. Gen. N. Amer. Pl. 2: 179. 1818. *Calliopsis rosea* (Nutt.) Spreng. Syst. Veg. 3: 611. 1826. *Conopsis rosea* Nutt. ex Less. Syn. Gen. Compos. 228. 1832 (sphalm). *Coreopsis rosea* f. *leucantha* Fern. Rhodora 21: 171. 1919.

Herba erecta, simplex vel ramosa, glabra, sub terra caulibus horizontalibus repens, caule supra terram tereti vel superne vix angulato 2-6 dm. alto. Folia opposita axillis saepe foliosis, basi ciliata parce connata, 2-5 cm. longa, integra vel irregulariter plus minusve 2- vel 3-partita, lamina vel segmentis linearibus, 0.5-3 mm. latis, eciliatis, apice parce acutis. Capitula ramulos tenues apicem versus nudos (pro pedunculis 3-8 cm. longis) aliter foliosos terminantia, radiata, pansa ad anthesin 2-2.5 cm. lata et 4-6 mm. alta. Involucri glabri bractee exteriores 6-10, saepe irregulariter positae, mox patentes, oblonge lineari-lanceolatae, tantum 1-3 mm. longae; interiores oblongo-ovatae, basim versus connatae, 4-6 mm. longae. Flores ligulati circ. 8, rosei vel rarius albidii, ligula cuneato-oblongi, apice plerumque 3-lobati lobo mediano rursus lobulato, 8-13 mm. longi. Paleae lineares, 2-4 mm. longae. Flores tubulosi flavidi, stylorum ramis apice abrupte conico-incrassatis. Achaenia obcompressa, anguste elliptico-oblonga, nigra, exalata, glabra vel papillata, apice exaristata sed vix poculata, circ. 2 mm. longa.

Type specimen: None cited, but "open grassy swamps, from New Jersey to Georgia" given as the habitat.

Distribution: Southwesternmost Nova Scotia; Massachusetts to Delaware and (fide Nutt.) south to Georgia.

Specimens examined: *J. W. Adams* 480, Hankens Pond, on Petti-coat Branch of Maurice River, Millville, New Jersey, August 15, 1926 (Gray); *anon.*, Smithfield, Rhode Island, 1871 (Gray); *C. F. Batchelder*, in water at marshy edge of pond, Falmouth, Massachusetts, August 14, 1906 (Gray); herb. *William Boott*, Winter Pond, Winchester, Massachusetts, July 30, 1876 (Gray); *J. Bernard Brinton*, low grounds, Egg Harbor, New Jersey, September 3, 1888

(Field); *idem*, Egg Harbor, August 18, 1889 (Field); *William M. Canby*, Felton, Delaware, September, 1867 (Gray); *idem*, swamps, Delaware, August, 1877 (Field); *J. Franklin Collins*, Spectacle Pond, Lincoln, Rhode Island, September 11, 1900 (Gray); *idem*, *M. L. Fernald*, & *H. H. York* 294, wet sand, margin of Sand Pond, Warwick, Rhode Island, September 8, 1914 (Berl.; Field); *Joseph W. Congdon*, Lincoln, Rhode Island, August 22, 1871 (Field); herb. *Carlton C. Curtiss*, Martha's Vineyard, August 13, 1892 (Field); *M. L. Fernald*, *E. B. Bartram*, & *B. Long* 24687, peaty and cobbly beach of St. John (Wilson's) Lake, Yarmouth County, Nova Scotia, July 23, 1921 (Gray); *idem* 24688, peaty margin of Goven Lake, Yarmouth County, Nova Scotia, July 23, 1921 (Gray); *M. L. Fernald*, *C. H. Bissell*, *C. B. Graves*, *B. Long*, & *D. H. Linder* 22859, gravelly margin, northwest side of Tusket (Vaughan) Lake, Nova Scotia, August 20, 1920 (Gray); *Fernald & Long* 10664, damp, sandy shore of Loon Pond, Lakeville, Massachusetts, August 26, 1913 (Gray); *idem* 10669, damp, sandy borders of ponds west of White Pond, Chatham, Massachusetts, September 9, 1913 (Gray); *idem* 17591, forming a broad belt, wet, sandy lower beach and inundated margin, Buck Pond, Harwich, Massachusetts, August 30, 1918 (Gray); *idem* 17594, eodem loco et tempore (Gray, 2 sheets); *idem* 24689, wet, cobbly beach of Vaughan (Tusket) Lake, Nova Scotia, August 13, 1921 (Gray); *idem* 24690, wet, peaty margin of Vaughan Lake at Gavelton, Nova Scotia, August 13, 1921 (Gray); *idem* 24691, peaty and cobbly margin of Gilfilling Lake, Yarmouth County, Nova Scotia, August 23, 1921 (Gray); *idem* 24692, peaty and sandy margin of Salmon (Greenville) Lake, Yarmouth County, Nova Scotia, August 25, 1921 (Gray); *idem* & *D. H. Linder* 22860, cobbly beach of Tusket (Vaughan) Lake, Gavelton, Nova Scotia, September 4, 1920 (Gray); *idem* 22861, wet, peaty shore, East Branch of Tusket River, Gavelton, September 4, 1920 (Gray); *idem* 22862, sandy and gravelly beach of Butler's (Gavelton) Lake, Gavelton, September 4, 1920 (Gray); *Mrs. E. T. Gibbs*, South Pond, Plymouth, Massachusetts (Gray); *Jesse M. Greenman* 437, Nine Mile Pond, Cape Cod, Massachusetts, September 5, 1898 (Gray); *H. D. House* 9660, Artist's Lake, Middle Island, Suffolk County, New York, August 14, 1923 (Gray); *Edwin Hunt*, Sudbury, Massachusetts, August 12, 1874 (Field); *George G. Kennedy*, Orleans, Massachusetts, July 31, 1891 (Gray); *idem*, Sharon, Massachusetts, September 2, 1904 (Gray); *L. A. Kenoyer & F. W. Pennell* 3224, margin of Mares Pond, Falmouth, Massachusetts, July 29, 1911

(Gray); *Henry A. Lang*, Egg Harbor, New Jersey, September 10, 1905 (Gray); *E. S. Miller*, Long Pond, Wading River, New York, August 30, 1871 (Gray); *idem*, Wading River, August 18, 1877 (Field, 2 sheets); ex herb. *Thomas Morong*, pond borders, Winchester, Massachusetts, August 5, 1881 (Field); *John Murdoch, Jr.*, Orleans, Massachusetts, August 22, 1900 (Field); *Joseph Murdoch*, Rochester, Massachusetts, August 24, 1902 (Field); *Oakes*, in sandy, flooded places, Plymouth, Massachusetts (Gray); *C. F. Parker*, Bristol, Pennsylvania, August 11, 1865 (Field; Gray); herb. *Margaret P. (Mrs. Robert Shaw) Russell*, Snow's Pond, Rochester, Massachusetts, August 17, 1918 (Gray); *F. C. Seymour 1884*, in shallow water, Seth's Pond, West Tisbury, Martha's Vineyard, Massachusetts, September 7, 1917 (Gray); *Harold St. John 2939*, grassy shore of Long Pond, Southampton, New York, August 18-21, 1920 (Gray); *G. Thurber*, Cranston, Rhode Island, August, 1844 (Berl.); ex herb. *E. Tuckermann, Jr.*, New England (Berl.); *Emile F. Williams*, Cataumet, Cape Cod, Massachusetts, September 15, 1901 (Gray).

96. *Coreopsis Cardaminefolia* (DC.) Torr. & Gray, Fl. N. Amer. 2: 346. 1843. *Calliopsis Cardaminefolia* DC. Prodr. 5: 568. 1836. *Coreopsis Cardaminifolia* DC. ex Nutt. Trans. Amer. Phil. Soc. n. ser. 7: 360. 1841 (sphalm). *Coreopsis Cardaminefolia* var. *angustiloba* Torr. & Gray, loc. cit. *Coreopsis Cardaminefolia* var. *lineariloba* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 291. 1884.

Herba annua, glabra, erecta, gracilis, suberecte ramosa, 2-5 dm. alta, caulibus subteretibus, foliosis. Folia opposita, remota, quam internodia breviora, petiolata petiolis plerumque 1-4 dm. longis (summa sessilia), inferiora medianaque laminis 1-2-pinnata segmentis elliptico-oblongis vel late angustave linearibus, superiora nunc pinnatim paucilobata nunc simplicia. Capitula saepe numerosa, tenuiter pedicellata pedicellis glabris 1-5 cm. longis, radiata, pansa ad anthesin tantum circ. 1.6-2.4 cm. lata et 6-8 mm. alta. Involucri glaberrimi bracteae exteriores 6-9, plus minusve lanceolatae atque irregulariter positae, saepe subacutae, marginibus diaphanae, 1-2 mm. longae; interiores ovatae 5-8 mm. longae. Flores ligulati circ. 7 vel 8, ligula oblongo-obovati, guttur versus macula brunneo-purpurea ornati alibi flavi, apice 3-lobati, ± 1 cm. longi. Paleae filiformes, circ. 3-4 mm. longae. Flores tubulosi minuti, numerosi, corolla atro-purpurei, stylorum ramis apice obtusissime conicis. Achaenia elliptico-oblonga, valde obcompressa, faciebus glaberrima vel minute tuberculata, marginibus anguste vel late alata, circ. 2 mm. longa, apice calva vel minute bidentata.

Type specimen: The species was founded upon four specimens ("pl. exs. 1668, 1956, 1478, et 2312") collected by *Jean Luis Berlandier* at various locations in southeasternmost Texas and adjacent Mexico (Del.). DeCandolle gave three localities: (1) between Bexar (Bejar) and Trinity River; (2) at Matamoras, State of Tamaulipas, Mexico; (3) at Lake St. Nicholas, Corpus Christi Bay.

Distribution: Western Louisiana, Kansas, and Arizona southward to States of Tamaulipas, Coahuila, and Chihuahua, Mexico.

Specimens examined: *Berlandier* 566, Texas, May 15, 1829 (Mo.); *idem* 882, about Matamoras, State of Tamaulipas, Mexico, April, 1831 (Gray); *idem* 1073, from Matamoras northward to Nueces River, Texas, April, 1834 (Gray); *idem* 1956, Texas, May 15, 1829 (Gray); *idem* 2312, about Matamoras, State of Tamaulipas, April, 1831 (Gray); *idem* 2503, from Matamoras to Nueces River, Texas, April, 1834 (Gray; Mo.); *idem* 2580, Texas (Field); *R. S. Cocks*, Cameron, Louisiana, July, 1903 (Gray); *J. F. Collins* 8, wastes, Providence, Rhode Island, July 30, 1892 (Gray); *Miss M. B. Croft*, San Diego, Texas, 1885 (Field); *Thomas Drummond* 68, Brazos River, Texas (Gray); *A. Fendler* 397 pro parte, Pawneefork, New Mexico, August, 1847 (Mo.); *idem* 441, New Mexico, 1847 (Gray; Kew); *J. Gregg* 901, prairie west of Matamoras, State of Tamaulipas, Mexico, June 5, 1847 (Mo.); *Dr. Hale*, Louisiana (Gray); *Elihu Hall* 344 pro parte, wet places, Hempstead, Texas, May 28, 1872 (Field); *Herbert C. Hanson* A13, alt. 2,100 meters, wet places, Flagstaff, Arizona, August 22, 1922 (Field); *Harvard Univ. Bot. Gard.*, cult. e sem. Texanis anno 1849 (Gray); *W. W. Jones* 160, Verde Valley, Arizona, September 9, 1920 (Gray); *Lindheimer* 102 p.p., Texas, 1843 (Gray); *D. T. MacDougal* 293, alt. 2,100 meters, vicinity of Flagstaff, Arizona, July 15, 1898 (Field; Gray); *E. W. Nelson* 6104, near Colonia García, in the Sierra Madre, State of Chihuahua, Mexico, August 25, 1899 (Gray); *idem* 6813, Sabinas, State of Coahuila, Mexico, May 21, 1902 (Gray); *E. W. Olive* 72, abundant in buffalo wallows, near Cinnamon City, Oklahoma, July, 1893 (Field); *J. H. Oyster* 4014, Kansas, September 7, 1884 (Field); *Edward Palmer* 635, States of Coahuila and Nuevo León, Mexico, February–October, 1880 (Gray); *idem* 655, San Lorenzo de Laguna and vicinity, southwest of Parras, State of Coahuila, May 1–10, 1880 (Field); *C. G. Pringle* 8328, alt. 210 meters, Río Grande Valley near Díaz, State of Coahuila, April 25, 1900 (Field; Gray; Pom.); *J. Reverchon* 83, western Texas, 1882 (Gray); *J. T. Rothrock* 157, alt. 2,010 meters, Zuni Village, New Mexico, July, 1874 (Field);

Gray); *B. C. Tharp* 5627, causeway, Corpus Christi, Texas, March 16, 1929 (U.S.); *J. W. Toumey* 594, Flagstaff, Arizona, June 30, 1892 (Gray); *Townsend & Barber* 150, alt. 2,250 meters, near Colonia García, in the Sierra Madre, State of Chihuahua, Mexico, July 19, 1899 (Field; Gray); *W. F. Thurrow*, Hockley, Texas, 1890 (Field); *C. Wright* 340, western Texas, October, 1849 (Gray); *idem* 1236, New Mexico, 1851 (Gray); *M. S. Young*, muddy hollow in the plains, near Paloduro Canyon, Texas, September 7, 1917 (Mo.).

97. *Coreopsis stenophylla* Boynt. Biltmore Bot. Studies 1: 141. 1902.

Herba glabra, annua vel vix perennis, 3–4 dm. alta, caulibus rigidis sed gracilibus, subfastigiatis ramosis, omnino foliosis. Folia opposita, rigidula, erecta vel adscendentia, plerumque quam internodia longiora, simplicia vel irregulariter pinnata, lamina vel foliolis filiformibus vel anguste linearibus usque ad 2 mm. latis. Capitula subnumerosa, tenuissime pedicellata pedicellis ± 5 cm. longis, radiata, pansa ad anthesin 2–3 cm. lata et ± 6 mm. alta. Involucri bractearum exteriores circ. 8, lanceolatae, 1–2 mm. longae; interiores ovatae 5–6 mm. longae. Flores ligulati plerumque 8, flavi, ligula obovati, apice 3-lobati lobis rotundatis, 1–1.4 cm. longi. Flores tubulosi atro-rubri, stylorum ramis apice plus minusve truncatis. Paleae lineares, acutae. Achaenia plana, elliptico-oblonga, 1.5–2 mm. longa, marginibus anguste alata alis integris, apice bidentata dentibus brevibus crassis.

Type specimen: Collected for the *Biltmore Herbarium*, in pine woods near Hammond, Louisiana, September 17, 1900. The type, now probably destroyed, was in the Biltmore Herbarium. An excellent duplicate specimen is extant (N.Y.).

Distribution: Louisiana.

Specimens examined: Ex *Biltmore Herb.*, Hammond, Louisiana, September 17, 1900 (N.Y., cotype); *R. S. Cocks* 3631, dry, open, sandy fields, Shreveport, Louisiana, July, 1907 (N.Y.); *S. M. Tracy* 3456, Lake Charles, Louisiana, August 9, 1897 (N.Y.); ex herb. *C. L. Willich & F. W. Weiss*, loco ignoto (Berl.).

98. *Coreopsis similis* Boynt. in Small, Fl. S. E. United States 1278, 1340. 1903.

Herba annua, glabra, erecta, 1–3 dm. alta, caulibus sulcatis striatisque, ramosis. Folia opposita, polymorpha, principalia tenuiter petiolata petiolis usque ad 7 cm. longis, petiolo adjecto 2–8 (–13) cm.

longa, simplicia vel pinnatim partita, lamina vel foliolis oblonge linearibus vel elliptico-oblongis (raro oblongo-ovalibus), apice acutis vel obtusis, membranaceis, 5–12 mm. latis; summa simplicia vel pinnata, lamina vel foliolis plerumque angusto-linearibus. Capitula pauca vel numerosa, subcorymbosa, tenuissime pedicellata pedicellis ± 5 cm. longis, radiata, pansa ad anthesin 1.5–2.5 cm. lata et 6–8 mm. alta. Involucri bracteae exteriores 7–9, lanceolatae vel interdum ovatae, glabratae, apice obtusae, 1.5–2 mm. longae; interiores ovatae, 4–5 mm. longae. Flores ligulati plerumque 8, supra guttur purpureo-rubri alibi flavi, ligula obovati, apice 3-lobati lobis rotundatis, ± 1 cm. longi. Flores tubulosi numerosissimi, minuti, corolla atro-purpurei, stylorum ramis obtusissimo-apiculati. Achaenia plana, orbiculata, faciebus subnigris glabra, marginibus late alata unica ala diametro corpus (nunc 2 mm. longum et 0.5 mm. latum, nunc 3 mm. longum et 1 mm. latum) aequante, apice biaristata aristis tenuibus glabris externe ad alas plus minusve adgregatis tantum circ. 0.5 mm. longis.

Type specimen: Collected by *G. C. Nealley* at Brazos Santiago, Texas, 1889 (U.S.). The year is erroneously given by Boynton as 1899.

Distribution: Along the Gulf of Mexico coast, Texas.

Specimens examined: *W. L. Bray* 48, Virginia Point, Texas, April 16, 1899 (U.S.); *A. Arthur Heller* 1548, sea level to 12 meters alt., Corpus Christi, Texas, April 9–12, 1894 (Gray; Mo.; N.Y.); *G. C. Nealley*, Brazos Santiago, etc. (type, U.S.; cotype, Field); *Robert Runyon* 335, Brownsville, Texas, January, 1923 (U.S.).

99. *Coreopsis Atkinsoniana* Dougl. in Lindl. Bot. Reg. pl. 1376. 1830. *Calliopsis Atkinsoniana* (Dougl. in Lindl.) Hook. Fl. Bor. Amer. 1: 311. 1833.

Herba annua vel plus minusve perennis, erecta, glabra, 6–12 dm. alta, ramosa ramis arcuato-adscendentibus vel suberectis, caulibus angulatis, internodiis saepius elongatis. Folia radicalia 1–3-(saepius 2-) pinnatisecta segmentis lineari-oblongis vel anguste elliptico-lanceolatis terminali multo majore petiolo 2–8 cm. longo, 1–2 dm. longa; caulina plerumque 1–2-pinnatisecta segmentis anguste linearibus vel lineari-subspathulatis. Capitula subnumerosa, tenuiter pedunculata pedunculis glabris plerumque 5–15 cm. longis, radiata, pansa ad anthesin 3–5 cm. lata et 7–10 mm. alta. Involucri bracteae exteriores 8–12, saepe irregulariter positae, lineari-oblongae, glabrae, margine scariosae, apice obtusae, 1–3 mm. longae; interiores ovatae, saepissime glaberrimae, 6–8 mm. longae.

Flores ligulati plerumque 8, guttur versus brunneo-purpurei alibi flavi, ligula cuneate obovati, apice 3-lobati lobo mediano rursus 2-3-lobulato, 1.2-1.8 cm. longi. Paleae tenuiter oblongo-lineares, marginibus scariosae alibi aurantiaco-rubrae, ± 5 mm. longae. Flores tubulosi corolla purpureo-rubri, stylorum ramis apice abrupte subtruncatis. Achaenia valde obcompressa, nigra, oblonga vel oblongo-ob lanceolata, faciebus glabra vel minutissime sparsimque papillata marginibus angustissime alata, 2.4-2.8 mm. longa, apice calva ve, vix bidentata.

Type specimen: Collected by *David Douglas* on *Mewries* (or *Menzies*, cf. DC. Prodr. 5: 568. 1836) Island in the Columbia River in 1825.

Distribution: Saskatchewan and British Columbia southwardly to Oregon, Arizona, and South Dakota.

Specimens examined: *L. R. Abrams* 9465, Hood River, Hood River County, Oregon, July 25-28, 1922 (Pom.); *Anon.*, cult. ex sem. ex herb. DeCand., anno 1839 (Gray); *E. Bourgeau*, rare, near lake on the prairie, Saskatchewan, September 17, 1857 (Kew); *Townsend S. Brandegee*, the Dalles, Oregon, 1882 (Calif.); *Douglas*, North America (Gray); *idem*, Fort Vancouver, British Columbia (Gray); *Drake & Dickson*, Bradfords Island, Columbia River, June, 1889 (Field); *A. D. E. Elmer* 601, sand-gravel shores of Palmer Lake, northwest of Loomiston, Washington, August, 1897 (Berl.; Pom.); *Griffiths*, Highmore, South Dakota, July, 1897 (Berl.); *Elihu Hall*, Oregon (Field); *idem*, cult. from Dakota seed, 1877 (Gray); *W. G. W. Harford & George W. Dunn*, Cascades, northwestern United States, May 28, 1869 (Berl.); *A. Arthur Heller*, Coeur d'Alene River, near Harrison, Idaho, July 12, 1892 (Field); *idem*, about Lake Pend d'Oreille, near Lakeview, Idaho, August 1-10, 1892 (Pom.); *Thomas J. Howell*, Oregon, 1881 (Field); *idem*, Klickitat, Washington, June, 1881 (Field); *idem*, banks of Columbia River, July, 1881 (Berl.); *idem* 224, Multnomah County, Oregon, July, 1877 (Gray); *Marcus E. Jones*, Sand Point, Idaho, September 18, 1908 (Pom.); *Frank O. Kreager* 315, marshy shore of Lake Calispell, Stevens County, Washington, July 28, 1902 (Gray); *John B. Leiberg* 1542, alt. 640 meters, region of Coeur d'Alene Mountains, Idaho, August 17, 1895 (Field; Gray; Pom.); *Lemmon* 4159, meadow near San Francisco Mountains, Arizona, September, 1884 (Gray); *Dr. Lyall*, Cascade Mountains to Fort Colville, lat. about 49° N., 1860 (Gray); *idem*, from Fort Colville to Rocky Mountains (Oregon Boundary), 1861 (Berl.); *Daniel T. MacDougal* 617, Lakeview, Idaho, August,

1892 (Field); *Ernest MacKay* 25, very abundant in wet sand, head of Grand Coulee, Douglas County, Washington, July 12, 1902 (Gray; Pom.); *J. M. Macoun*, between Kettle and Columbia Rivers, Waneta, British Columbia, July 28, 1902 (Berl.; Field; Gray; Pom.); *J. C. Nelson* 1980, sandy shore of Columbia River, Hayden Island, Oregon, September 8, 1917 (Gray); *Frank W. Peirson* 3900, near Biggs, Oregon, July 16, 1923 (Pom.); *C. G. Pringle*, banks of Columbia River, Washington, September 10, 1881 (Field); *Margaret P. (Mrs. Robert Shaw) Russell*, Hood River, Oregon, August 15 (Gray); *J. H. Sandberg, D. T. MacDougal, & A. A. Heller* 617, on shores near Farmington Landing, Lake Coeur d'Alene, Idaho, July 11, 1892 (Berl.; Field; Gray; Pom.); *E. P. Sheldon* 11081, Bonneville, Oregon, August 10, 1902 (Gray; Pom.); *Sherff* 250 pro parte, cult., St. Louis, Missouri, July 6, 1910 (Gray); *Rev. Mr. Spalding*, Clear Water, Oregon (Gray); *W. N. Suksdorf*, bottom lands of the Columbia River, Washington, August 26, 1882 (Berl.); *G. R. Vasey* 551, Washington, 1889 (Gray); *Sereno Watson* 217, Bed of Columbia River, Old Fort Colville, Washington, October 3, 1880 (Gray); *idem* (similiter) 217, mouth of the Chelan, Columbia River, Okanogen County, Washington, October 12, 1880 (Gray).

100. *Coreopsis Leavenworthii* Torr. & Gray, Fl. N. Amer. 2: 346. 1843. *Coreopsis angustata* Greene, Pittonia 4: 239. 1901.

Folia simplicia.....var. δ *Lewtonii*.

Folia principalia 1-2-pinnata.

Foliorum caulinarum foliola terminalia nunc obovata nunc lanceolato-oblonga, 0.8-1.5 cm. lata.....var. β *Garberi*.

Foliorum caulinarum foliola terminalia (vel eorum segmenta ultima) circ. 1-3 mm. lata.

Folia basalia pinnatim circ. 9-partita.....var. γ *Curtissii*.

Folia basalia integra.....*C. Leavenworthii* sensu stricto.

Herba annua, erecta, glabra, 5-15 dm. alta, caulibus teretibus subsimplicibus vel suberecte ramosissimis, omnino vel fere usque ad summam foliosis. Folia opposita, ima integra elongate lineari-spathulata, quam internodia longiora, petiolis ± 1 dm. longis, laminis ± 5 cm. longis et saepius 3-5 mm. latis; principalia internodiis longiora, saepius 2-5-partita segmentis anguste linearibus plerumque 1-3, mm. latis et petiolo elongato plus minusve similibus; summa integra, internodiis breviora. Capitula pauca vel numerosa, paniculato-corymbosa, tenuiter pedicellata, radiata, pansa ad anthesin 2-3 cm. lata et circ. 5-6 mm. alta. Involucri bracteae exteriores

circ. 6–10, saepe irregulariter positae, lineari-lanceolatae vel ovato-lanceolatae, saepe coloratae, apice obtusae, margine plus minusve diaphanae, tergo plerumque scabridae, tantum 1–2 mm. longae; interiores ovatae, supra pubescentes, 5–7 mm. longae. Flores ligulati circ. 8, flavi, ligula obovati, apice 3-lobati lobis triangulato-rotundatis mediano majore saepe emarginato, 0.8–1.5 cm. longi. Paleae lineares vel subfiliformes, acutae, demum circ. 2–4 mm. longae. Flores tubulosi numerosi, minuti (circ. 2.2 mm. longi), stylorum ramis apice lato-conicis. Achaenia obcompressa, glabra, corpore nigro 2–3 mm. longo et circ. 0.5–0.7 mm. lato lineari-oblonga, marginibus membranaceo-alata ala subbrunnea corporis latitudinem aequante vel superante, apice biaristata aristis erectis tenuibus antrorsum hispidulis circ. 0.3–0.6 mm. longis.

Type specimen: Collected by *Melina C. Leavenworth*, in Florida. The first cited specimen came from Tampa Bay (Gray).

Distribution: Florida.

Specimens examined: *John H. Barnhart* 2715, moist ground near Ehren, April 26–May 16, 1899 (Field); *F. S. Blanton* 6972, wet ditch, roadside, south of Lakeland, March 28, 1930 (Field); *Mrs. E. G. Britton* 132, prairie west of Cutter, March 23, 1904 (Field); *Buckley*, Florida (Gray); ex herb. *William Canby*, shores of Indian River, February, 1889 (Gray); *A. H. Curtiss* 5375, shore of Lake Worth, May 8, 1895 (Gray; Pom.); *Mrs. Charles C. Deam* 1709, border of Lake Worth, near West Palm Beach, February 22, 1904 (Gray); *A. Fredholm* 5473, prairie, Orange County, August 8, 1902 (Gray); *idem* 5778, low prairie, Okeechobee region, Brevard County, April 13, 1903 (Gray); *idem* 6094, swamp, Osceola County, October 12, 1903 (Gray); *A. P. Garber*, Tampa Bay, 1876 (Gray); *idem*, Keys of Florida, 1876 (Gray); *idem*, Mellonville, March, 1876 (Field); *idem*, Lake Monroe, March, 1876 (Field); *idem*, Tampa, May, 1876 (Field); *idem*, Rosewood, June, 1876 (Field); *W. Garvens*, vicinity of Palm Beach, February 15–March 15, 1908 (Field); *Albert S. Hitchcock*, New River, December 26, 1895–January 11, 1896 (Field); *idem*, Palm Beach, eodem tempore (Field); *idem*, Levy County, June–July, 1898 (Field); *William Kellogg*, Owanita, about March 18, 1907 (Gray); *Dr. Leavenworth*, Tampa Bay (type, Gray); *George V. Nash* 832, hummock land, vicinity of Eustis, May 16–31, 1894 (Berl.; Field; Gray); *idem* 1257, eodem loco, July 1–15, 1894 (Berl.; Gray); *idem* 1876, Orange Bend, May 28–June 15, 1895 (Pom.); *Edward Palmer* 286, Indian River, 1874 (Gray); *Fannie R. Randolph* 136, moist sand among sand dunes near Lake Worth, Kelsey City,

January 2, 1921 (Gray; foliis omnibus simplicibus); *F. Rugel* 102, Florida (Field); *idem* 142, Florida, 1845 (Mo.); *John K. Small & J. J. Carter*, Bull Key, opposite Lemon City, November 6, 1903 (Field); *idem* 1219, Fort Lauderdale, November, 1903 (Field); *John Donnell Smith*, grassy pine barrens, Sumter County, March 21, 1883 (Field); *Miss Jeanette P. Standley* 195, in pine land, vicinity of Fort Myers, May 20, 1916 (Field; Gray); *F. C. Straub* 97, Port Orange, April 9, 1895 (Gray); *idem* 159, eodem loco, May 18, 1895 (Gray); *S. M. Tracy* 6920, Palma Sola, May 16, 1900 (Mo.); *idem* 6921, eodem loco et tempore (Field, 2 sheets; N.Y.; U.S.; cotypes of *Coreopsis angustata* Greene); *idem* 7704, Braidentown, June 15, 1901 (Berl.; Field; Gray); *H. J. Webber*, Sanibel Island, January 29, 1896 (Field); *idem* 414, margin of Lake Worth, West Palm Beach, June 7, 1896 (Field).

Coreopsis Leavenworthii var. β *Garberi* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 291. 1884.

Folia caulina omnia pinnatim 5–7-partita foliolis brevioribus latioribusque, terminali subobtusio nunc obovato nunc lanceolato-oblongo, 0.8–1.5 cm. lato.

Type specimen: Collected by *Abraham Pascal Garber*, Tampa, Florida, May, 1876 (Gray).

Distribution: Known only from type locality of Tampa, Florida.

Specimens examined: *A. M. Ferguson*, pine barrens, Tampa, June–July, 1898 (Mo.); *A. P. Garber*, Tampa, May, 1876 (type, Gray).

Coreopsis Leavenworthii var. γ *Curtissii* Sherff, Bot. Gaz. 94: 592. 1933.

Folia 1–2-pinnata; basalia pinnatim circ. 9-partita, foliolis oblongo-linearibus ad basim sensim angustatis plerumque 2–4 cm. longis et 2–5 mm. latis, lateralibus (praecipue inferioribus) utrinque saepe rursus 1-lobatis lobo parvo linearique; caulina quam internodia nunc multo longiora nunc multo breviora, plerumque 2-pinnata foliolis lateralibus saepius 3 vel 4 jugis, segmentis ultimis omnibus 0.5–2.5 cm. longis et circ. 1–3 mm. latis.

Type specimen: Collected by *Allen Hiram Curtiss*, No. 6734, in dry, pastured ground along the Suwannee River, near Branford, Florida, October 23, 1900 (Gray, 2 sheets).

Distribution: Known only from type locality in Florida.

Specimens examined: *Curtiss* 6734 (Gray, 2 type sheets).

Coreopsis Leavenworthii var. δ **Lewtonii** (Small) Sherff, Bot. Gaz. 94: 592. 1933. *C. Lewtonii* Small, Bull. Torr. Bot. Club 25: 146. 1898.

E specie foliis simplicibus plerumque quam internodiis brevioribus radice saepe perenni differt.

Type specimen: Collected by *Frederick Lewis Lewton*, Forest City, Florida, 1894 (N.Y.).

Distribution: Florida.

Specimens examined: *Liberty H. & Ethel Zoe Bailey 13047*, sands at Sarasota, September 28, 1929 (Field); *A. H. Curtiss 1480*, swamps and shores, Halifax River, June (Berl.; Field, 2 sheets; Gray); *A. A. Eaton 469*, Little River, Dade County, December 5, 1903 (Field, 2 sheets); *Albert S. Hitchcock 139*, around flatwood ponds, Myers, July–August, 1900 (Field); *Frederick L. Lewton*, Forest City, 1894 (type, N.Y.); *idem*, Cedar Hammock, Sumter County, August 3, 1894 (N.Y.); *George V. Nash 2255*, Sanford, July 24, 1895 (Berl.; Field; Gray); *F. Rugel 133*, Florida, 1843 (Gray; Mo., 2 sheets); *J. K. Small & J. J. Carter 3025*, the Everglades, intersecting Long Key, January 18–26, 1909 (N.Y.); *John Donnell Smith*, pine-barren ponds, Pellicier's Creek, St. John's County, March 4, 1882 (Field, 3 sheets; Gray); *S. M. Tracy 7256*, Long Key, May 8, 1901 (Berl.; Field; Gray); *idem 7355*, Perico Island, December 6, 1901 (Gray; Mo.).

101. **Coreopsis saxicola** Alex. Torreya 32: 161. 1932.

Herba perennis, erecta, glabra, suberecte ramosissima, saltem superne foliosissima, 7–10 dm. alta, caule subtereti ramis tetragonis. Folia opposita, principalia petiolata petiolis eciliatis inferne dilatatis basi connatis saepius 1–4.5 cm. longis, pinnata vel bipinnata segmentis oblongo-linearibus sparsim minuteque ciliatis 2–9 (rarius –13) mm. latis (raro multa simplicia spathulataque). Capitula corymbose disposita, tenuiter pedunculata pedunculis ± 1 dm. longis, radiata, pansa ad anthesin 2.5–4 cm. lata et circ. 1–1.2 cm. alta. Involucri bracteae exteriores plerumque 7 vel 8, lanceolatae, apice acutae vel subacutae ac saepe hispido-ciliatae alibi glabrae, marginibus albidae, 7–9 mm. longae; interiores oblongo-ovatae paulo longiores. Flores ligulati circ. 8, subaurantiaci, ligula oblongi vel cuneato-obovati, apice tenuiter lobati lobis plus minusve lobulatis, ± 1.5 cm. longi. Paleae lineares, superne attenuatae atque elongatae, demum circ. 6–8 mm. longae. Florum tubulorum styli ramorum terminis breviter conici. Achaenia obcompressa, valde

incurva, circumambitu orbiculata vel obovato-orbiculata, atra, faciebus glabra vel papillata, circ. 2 mm. longa et (alis brunneis irregulariter pectinato-laceratis inclusis) circ. 2–2.5 mm. lata, apice demum calva.

Type specimen: Collected by *Francis W. Pennell*, No. 4029, on thin soil over granite, Stone Mountain, DeKalb County, Georgia, August 2, 1912 (N.Y.).

Distribution: DeKalb County, northern Georgia, westward into Tallapoosa County, Alabama.

Specimens examined: *F. S. Earle 2147*, Double Bridges, Tallapoosa County, Alabama, August 9, 1899 (N.Y.); *H. Eggert*, Stone Mountain and vicinity, DeKalb County, Georgia, July 23, 1897 (Mo., 2 sheets; N.Y.); *F. W. Pennell 4029* (type, N.Y.); *John Kunkel Small*, alt. 300–450 meters, on and about Stone Mountain, Georgia, August 1–6, 1895 (Field; N.Y.); *Karl M. Wiegand & W. E. Manning 3421*, sandy soil, northwest base of Stone Mountain, Georgia, August 17, 1927 (Pom.; forma foliis plerumque simplicia); *idem 3422*, turfy rocky slope, base of Stone Mountain, Georgia, August 17, 1927 (Pom.).

An anomalous species, combining the foliar habit, involucre, and paleae of *Eucoreopsis* (especially *C. grandiflora*) with the lacerate-winged achenes of species like *C. linifolia*. The tips of the style branches of the disc florets are somewhat intermediate, being less elongate-cuspidate than in the former but more definitely conical than in the latter.

102. *Coreopsis paludosa* M. E. Jones, Contr. West. Bot. 12: 46. 1908.

Herba annua, erecta, glabra, subsucosa, simplex vel paniculato-ramosa, ± 6 dm. alta, internodiis elongatis usque ad 1.7 dm. longis. Folia alterna, nunc simplicia (pro ramis vel plantis parvis), anguste spathulata, 3.5–7 cm. longa et 2–5 mm. lata, lamina sensim in petiolum subaequalem decurrente, integra, apice subobtusata; nunc 1–2-pinnata (pro plantis majoribus), majora (radicem versus posita) 1.5–2.25 dm. longa petiolata petiolo ± 8 cm. longo foliolis lineari-spathulatis apice subobtusis (lateralibus circ. 3 jugis, 2–4 cm. longis et 1.5–3.5 mm. latis terminali circ. 6–8 cm. longo et 7–8 mm. lato) saepius (ad marginem ad folii terminum spectantem) 1-lobatis lobo ± 8 mm. longo; altera minora, 1-pinnata, foliolis lateralibus 2 jugis. Capitula pauca (± 15), tenuiter pedicellata pedicellis usque ad 8 cm. longis, radiata, pansa ad anthesin ± 3.5 cm. lata et circ. 7–8 mm.

alta. Involucri glabri bracteae exteriores 4-6, oblongae, apice obtusae, plurinervatae, margine plus minusve hyalinae, adpressae vel rarius patentes, circ. 2 mm. longae; interiores ovatae, superne subelongatae, demum 6-8 mm. longae. Flores ligulati circ. 8, ligula rhomboideo-obovati, ad ligulae basim purpureo-maculati aliter flavi, supra medium 3-lobati lobis lateralibus parvis terminali multo majore, 1.5-2 cm. longi. Paleae anguste lineares, glaberrimae, 4-5 mm. longae. Florum tubulosorum stylorum rami termino truncati. Achaenia obcompressa, nigra, anguste obovata, basi flavo-callosa, faciebus glaberrima, marginibus pectinatim cartilagineo-dentata dentibus brunneis quam 0.1 achenii latitudinis non longioribus, apice calva, 2.4-3.2 mm. longa et circ. 1.2-1.4 mm. lata.

Type specimen: Collected by *Marcus E. Jones* at altitude of 2,100 meters, growing in water in creeks, etc., Marsh Lake, Sierra Madre, State of Chihuahua, Mexico, September, 1903 (Pom.).

Distribution: Known only from type locality in State of Chihuahua, Mexico.

Specimens examined: *Marcus E. Jones*, alt. 2,100 meters, Meadow Valley, Sierra Madre, State of Chihuahua, September 17, 1903 (Pom.; an associate type).

103. *Coreopsis Linifolia* Nutt. Journ. Acad. Phila. 7: 75. 1834. *Coreopsis callosa* Bertol. Misc. Bot. 7: 42. 1848.

Herba perennis, glabra, pallida, erecta, 5-7 dm. alta, caulibus gracilibus, supra ramosis, plus minusve tetragonis. Folia opposita vel inferiora alterna, integra, inferiora laminis spatulata vel oblanceolata quam internodia breviora (vel basalia interdum duplo longiora) 4-9 mm. lata apice rotundata basi petiolata petiolis saepius 1-4 cm. longis; alia sessilia, linearia, apice saepe truncata vel obtusissima, multo minora. Capitula pauca, corymboso-paniculata, tenuiter pedunculata pedunculis saepius 3-7 cm. longis, radiata, pansa ad anthesin 2-3 cm. lata et circ. 6-7 mm. alta. Involucri bracteae exteriores circ. 6-8, glabratae, saepe irregulariter positaе, ovatae, longitudinaliter pluristriatae, lateribus scariorae, apice subacutae vel rotundatae, 1-3 mm. longae; interiores oblongo-ovatae, saepius glabrae, 5-8 mm. longae. Flores ligulati circ. 7 vel 8, flavi, ligula obovati, apice 3-lobati lobo mediano emarginato, 1-1.5 cm. longi. Paleae lineares, apice acutae, circ. 5-6 mm. longae. Flores tubulosi corolla atro-purpurei, stylorum ramis apice obtuse conicis. Achaenia plana, oblonga vel ovalia, subnigra, faciebus glabra, marginibus ornata ala irregulariter lacerata circ. 0.2-0.3 corporis latitudinis

lata, corpore circ. 3 mm. longa, apice tenuiter biaristata aristis sparsim antrorsumque hispidis ± 1 mm. longis.

Type specimen: Collected in Alabama (Brit.?).

Distribution: North Carolina to Florida, thence westwardly to Alabama and Mississippi.

Specimens examined (formerly confused by me in herbaria with *C. longifolia* Small; for that reason there are cited here only the few specimens which have been recently reexamined): *A. W. Chapman*, wet barrens, Florida (Field); ex herb. *eiusdem* 174b, swamps in the pine barrens, Apalachicola, Florida, September 22, 1879 (Gray; Mo.); *A. B. Langlois*, Spring Hill, southern Alabama, October 1, 1880 (Field); *J. Skehan*, Ocean Springs, Mississippi, September 16, 1895 (Mo.); *John Donnell Smith*, open tidal marshes on Biloxi Bayou, Harrison County, Mississippi, September 16, 1885 (Field; Gray); *S. M. Tracy* 4778, Koshtaw, Mississippi, October 25, 1898 (Field; Mo.); *idem* 8565, Gateswood, Alabama, October 31, 1903 (Field; Gray; Mo.).

The type of *Coreopsis callosa* Bertol. has not been seen by me. Bertoloni's long description, however, fits *C. Linifolia*. His concluding observation ("Haec species appropinquaret *Coreopsisidem angustifoliam* Ait., si haberet omnia folia alterna, et lanceolato-lineararia") shows beyond doubt that he had our *C. Linifolia* before him. Moreover, Bertoloni's type had been collected by Dr. Gates in Alabama. A Gates specimen still extant (N.Y.; not cited above) was undoubtedly a duplicate. I found this latter to be typical *C. Linifolia*.

104. *Coreopsis longifolia* Small, Bull. Torr. Bot. Club 22: 47. 1895. *C. angustifolia* Dryand. in Ait. Hort. Kew. ed. 1. 3: 253. 1789. (Non L. Sp. Pl. 908. 1753.)

Herba perennis, glabra, pallida, 7-12 dm. alta, erecta, caulibus simplicibus vel summam versus parce ramosis, teretibus. Folia alterna, integra, basalia (petiolis elongatis adjectis saepius 1-2 dm. longa) quam internodia multo longiora laminis linearia vel lineari-oblonga vel lineari-lanceolata 2-11 mm. lata apice plus minusve acuta marginibus saepe subscariosa; superiora sessilia, ad bracteas lineares plus minusve reducta. Capitula pauca paniculato-corymbosa, tenuiter pedunculata pedunculis usque ad 2 dm. longis, radiata, pansa ad anthesin 3-5.5 cm. lata et ± 1 cm. alta. Involucri bracteae glabrae exteriores circ. 7-9, ovatae vel oblongo-lanceolatae, lateribus plus minusve diaphanae, apice saepe rotundo-dilatatae, 2-5 mm. longae; interiores oblongo-ovatae 6-12 mm. longae. Flores ligulati circ. 8, flavi, ligula cuneate obovati, apice 3-lobati lobo mediano

rotundato vel emarginato, 1.5–2.5 cm. longi. Paleae oblonge lineares, acutae, demum usque ad 1 cm. longae. Flores tubulosi corolla atropurpurei, stylorum ramis apice obtusissime conicis. Achaenia plana, corpore ipso circ. 4 mm. longo atra et circumambitu (alis exclusis) oblonga vel late linearia, faciebus glabra margine pectinato-alata dentibus brunneis quam corporis diametro 0.3–0.6 brevioribus, apice breviter biaristata aristis antrorsum setulosis saepe caducis.

Type specimen: Collected by *Allen Hiram Curtiss*, No. 4489, in dry, grassy pine woods about Jacksonville, Florida, October 16, 1898 (N.Y.).

Distribution: North Carolina, Georgia, and Florida.

Specimens examined (perhaps several additional specimens determined by me some years ago for various herbaria as *C. Linifolia* Nutt. will be found to belong here): *Curtis*, North Carolina (N.Y.); *A. H. Curtiss*, Florida, November (Field); *idem*, near Jacksonville, Florida, September (Gray); *idem* 1470, margin of swamp near Jacksonville, Florida, October (Pom.); *idem* 1477 pro parte, moist pine barrens near Jacksonville, November (Field, 2 sheets; N.Y.); *idem* 4489 (N.Y., 2 type sheets); *idem* 5266, moist pine barrens near Jacksonville, October 15, 1894 (Field; Gray; N.Y., 2 sheets; U.S.); *idem* 5348 pro parte, thickets bordering swamps near Jacksonville, October 22, 1894 (N.Y.); *idem* 5568, moist, grassy pine barrens near Jacksonville, October 7, 1895 (Field; Gray; Mo., 2 sheets; Pom.); *idem* 6278, sides of ditch near Jacksonville, October 31, 1898 (Field; Gray); *Mary E. Francis* 155, low grounds, Alva, Florida, November 25, 1917 (U.S.); *A. P. Garber*, Levy County, Florida, November, 1877 (Field; Gray; U.S.); herb. *Otto Katzenstein*, southeastern United States, September 23, 1897 (Gray); *L. H. Lighthipe* 557, South Jacksonville, Florida, October 30, 1896 (N.Y.); *F. Rugel* 480, Florida, 1845 (Field; U.S.); *J. H. Simpson*, Manatee, Florida, 1889 (U.S.); *J. K. Small & J. J. Carter* 1028, pine lands, Fort Lauderdale, Florida, November 19–25, 1903 (Field); *J. K. Small & G. V. Nash*, the Everglades, west of Miami, Florida, November 1–9, 1901 (N.Y.); *Miss Jeanette P. Standley* 423, low pine land, vicinity of Fort Myers, Florida, October 25, 1916 (Pom.); *S. M. Tracy* 7142, Braidentown, Florida, October 16, 1900 (Field; Gray; Mo.; N.Y.; U.S.).

Passes into *C. gladiata*.

105. *Coreopsis falcata* Boynt. Biltmore Bot. Studies 1: 141. 1902.

Herba perennis, pallida, glabra, 8–12 dm. alta, caulibus teretibus, summam versus corymbose ramosis. Folia alterna, inferiora petio-

lata petiolis 1–1.5 dm. longis lamina (aequaliter 1–1.5 dm. longa; 0.6–3 cm. lata) elliptico-oblonga vel linearia vel lineari-oblongata terminaliter nunc obtusa nunc longe attenuata marginibus integra vel saepe 1–2-lobata lobis angustis adscendentibusque; superiora sessilia, multo minora, angustiora, lateraliter saepe 1-plus-lobata. Capitula pauca vel vix subnumerosa, tenuiter pedunculata pedunculis ± 1 dm. longa, radiata, pansa ad anthesin 3–5 cm. lata et 6–9 mm. alta. Involucri glabri bracteae exteriores circ. 8–10, lanceolatae, 4–7 mm. longae; interiores ovatae vel oblongo-lanceolatae, dimidio longiores. Flores ligulati circ. 8, aurantiaco-flavi, ligula cuneato-obovati, apice 3-lobati lobo mediano majore rotundato vel emarginato, 1.3–2.3 cm. longi. Paleae lineares, acutae. Achaenia plana, oblonga, corpore circ. 4.5 mm. longa, marginibus alata alis latis pectinatis dentibus corporis diametrum fere aequantibus, apice biaristata aristis usque ad 1 mm. longis.

Type specimen: Collected for the *Biltmore Herbarium*, in shallow water near Pembroke, North Carolina, June, 1901. The type proper was preserved in the Biltmore Herbarium, where it was doubtless destroyed later on by flood waters. A sheet of fine duplicate material is still extant, however (N.Y.).

Distribution: North Carolina to Georgia.

Specimens examined: *Anon.*, Georgia (Gray); *anon.*, Macon, Georgia (N.Y.) (these first two specimens are doubtless of the same collection; the first had been studied by Asa Gray and was regarded by him as *C. gladiata* in his *Synoptical Flora of North America*; the second had come from John Torrey's private herbarium and was under the name *C. gladiata*; this latter specimen was probably the basis for Torrey and Gray's words "sometimes 1–2-ternately-parted" in describing the lower leaves of *C. gladiata* [Fl. N. Amer. 2: 347. 1843]); ex *Biltmore Herb.*, shallow water near Pembroke, North Carolina, etc. (cotype, N.Y.); ex *eodem* 14758b, shallow water or wet places in pine lands, Selma, North Carolina, May 31, 1902 (N.Y.); *Cuthbert*, in pool, Georgia, October 10, 1898 (N.Y.); *Karl M. Wiegand & W. E. Manning* 3410, dry pine woods, 7 miles north of Washington, North Carolina, June 21, 1927 (Pom.).

106. *Coreopsis gladiata* Walt. Fl. Carol. 215. 1788. *C. dichotoma* Michx. Fl. Bor. Amer. 2: 137. 1803.

Herba perennis, glabra, pallida, erecta, 6–8 dm. alta, caulibus teretibus vel vix angulatis, supra ramosa et subnudata. Folia plerumque alterna, integra, inferiora petiolata petiolis elongatis quam inter-

nodia plerumque multo longiora laminis elliptico-oblonga vel oblanceolata marginibus scariosa plerumque 1-2.5 cm. lata apice rotundata atque interdum aegre mucronata; superiora sessilia, multo minora, linearia vel spathulato-linearia. Capitula pauca, subcorymbosa, tenuiter pedunculata pedunculis glabris ± 1 dm. longis, radiata, pansa ad anthesin 3-4 (-6) cm. lata et 8-11 mm. alta. Involucri glabri bractee exteriores 4-10, saepe biseriatim dispositae, ovatae vel lanceolatae, plerumque obtusae, lateraliter scariosae, 2-4 (-6) mm. longae; interiores oblongo-ovatae 8-12 mm. longae. Flores ligulati circ. 8, flavi, ligula cuneato-obovati, apice 3-lobati lobo mediano rotundato vel saepius emarginato, 1-2.5 cm. longi. Paleae lineares, apice acutae, demum ± 8 mm. longae. Flores tubulosi corolla atro-purpurei, stylorum ramis apice late breviterque conicis. Achaenia plana, elliptico-oblonga, faciebus nigris glabra, marginibus anguste pectinato-alata, corpore circ. 3.5 mm. longa, apice biaristata aristis tenuibus antrorsum hispidis.

Type specimen: No specimen cited. The plant in mind was native to Carolina. My notes contain no mention of an authentic (author's) specimen among the Walter specimens in London (Brit.).

Distribution: North Carolina to southern Florida and westwardly to southern Mississippi.

Specimens examined: *C. Billington* 131, low places near salt water, Lynn Haven, Bay County, Florida, October 15, 1921 (U.S.); *Billmore Herb.* (ex herb. A. W. Chapman) 2066b, low pine barrens, Apalachicola, Florida, September 22, 1879 (Mo.; U.S.); *J. Brownfield*, Summerville, South Carolina, October, 1892 (Mo.); *William M. Canby*, vicinity of Wilmington, North Carolina, October, 1867 (Field; Mo.); ex herb. A. W. Chapman, southern Florida (Field; U.S.); A. H. Curtiss, Chattahooche, Florida, 1875 (U.S.); *idem* 1477 pro parte, moist pine barrens near Jacksonville, Florida, November (Gray; Mo.); *Roland M. Harper* 1666 p.p., wet barrens north of Moultrie, Georgia, September 24, 1902 (Berl.; Mo.; U.S.); *Albert S. Hitchcock* 910, New River, Florida, December 26, 1895-January 11, 1896 (Field); *Gerald MacCarthy*, eastern North Carolina, 1883 (Field); *Michaux*, North America (Berl., sub nom. *Coreopside dichotoma* Michx.); *Charles Mohr*, margins of pine-barren swamps, Poplarville, Mississippi, October 18, 1894 (U.S.); *John H. Redfield* 5630, near foot of Blue Ridge, Caesar's Head, South Carolina, September 3, 1876 (Mo.); *F. Rugel*, Florida, 1842-1849 (Mo.; foliorum apicibus *C. longifoliae* adpropinquans); *John K. Small & J. J. Carter* 694, in the Everglades, between Cocoanut Grove and

Cutler, Florida, October 31–November 4, 1903 (N.Y.); *idem* 954, in pine lands, Fort Lauderdale, Florida, November 19–25, 1903 (Field; N.Y.); *idem* 2731, pine lands between Perrine and Larkin, Florida, November 16, 1906 (N.Y.); *idem* & G. K. Small 3401, in the Everglades, Cutler to Homestead, Florida, February 15, 1911 (N.Y.); J. T. Stewart, in swamp, near Charleston, South Carolina, 1865 (Field); ex herb. Katherine A. Taylor, Summerville, South Carolina (Pom.).

Passes into *C. longifolia* and apparently also into *C. Linifolia*.

107. *Coreopsis Hellanthoides* Beadle, Bot. Gaz. 25: 448. 1898 (non *C. Helianthoides* Forst. Prodr. 91, num. 543. 1786; nomen subnudum).

Herba perennis, erecta, pallida, 5–12 dm. alta, caulibus glabris, plus minusve teretibus, summam versus erecto-ramosis. Folia alterna, moderate adpresso-hispida setis pluriloculatis, marginibus scariosae, apice obtusae vel acutae, inferiora longe petiolata petiolis glabratis conduplicatis saepius 0.5–1.5 dm. longis, lamina (saepe rhomboide vel oblonge) ovata vel ovato-lanceolata 6–13 cm. longa et 2–6 cm. lata; superiora abrupte minora, sessilia, elliptico-oblonga vel linearia. Capitula pauca, corymbosa, tenuiter pedunculata pedunculis ± 1 dm. longis, radiata, pansa ad anthesin 3–4.5 cm. lata et 7–9 mm. alta. Involucri glabri bractee exteriores 6–11, saepe subimbricatae, ovatae vel deltoideo-lanceolatae, tergo longitudinaliter pluristriatae, basi plus minusve subauriculatae, lateribus subdiaphanae, apice obtusae, plerumque 1–5 mm. longae; interiores ovatae vel interdum oblongo-lanceolatae, 8–12 mm. longae. Flores ligulati plerumque 8, flavi, ligula cuneato-obovati, apice grosse 3-lobati lobo mediano saepe emarginato, ± 2 cm. longi. Paleae tenuiter oblongo-lineares, ± 4 –5 mm. longae. Flores tubulosi corolla atropurpurea, stylorum ramis apice obtuse conicis. Achaenia oblonge oblanceolata vel obovata, valde obcompressa, subnigra, faciebus glaberrima, marginibus subregulariter pectinato-alata dentibus brevibus longitudine circ. 0.1–0.2 corporis latitudinis aequantibus, circ. 3 mm. longa, apice brevissime biaristata.

Type specimen: Collected by Alvin Wentworth Chapman, Aspalaga, Florida, October, 1897. Herbarium not cited but presumably was the Biltmore Herbarium. The Chapman specimen No. 2066c in Herb. N. Y. had been distributed from the Biltmore Herbarium.

Distribution: North Carolina southward to Florida and Alabama.

Specimens examined: Ex *Biltmore Herb.* 2139, Thomasville, Georgia, September 21, 1901 (N.Y.); *William M. Canby*, near Wilmington, North Carolina, October, 1867 (Field; Mo.; N.Y.); *A. W. Chapman*, Aspalaga, Florida, 1897 (U.S.); ex herb. *eiusdem* 2066b, low pine barrens, Apalachicola, Florida, September 22, 1879 (Gray); (ex *Biltmore Herb.*) ex *eodem herb.* 2066c, *eodem loco*, October, 1897 (N.Y.; undoubtedly cotype material); *A. H. Curtiss* 1477 pro parte, pine barrens, near Jacksonville, Florida, November (Berl.; Field; Mo.; U.S.); *idem* 4487, near Jacksonville, Florida, October 21, 1893 (N.Y.; U.S.); *idem* 5348 pro parte, thickets bordering swamps, *eodem loco*, October 22, 1894 (Field; N.Y., 2 sheets; U.S., 2 sheets); *idem* 10223, Chattahooche, Florida, October, 1875 (Mo.); *A. Cuthbert*, peat bog, Augusta, Georgia, September 25, 1898 (N.Y.); *Roland M. Harper* 653, alt. 90 meters, sandy bog just southeast of Americus, Georgia, September 15, 1900 (N.Y.); *idem* 1666 p.p., wet barrens north of Moultrie, Georgia, September 24, 1902 (Gray; N.Y.); *Charles Mohr*, below lake, pine barren swamp, Yellow Pine, Alabama, August 8, 1895 (U.S.); *J. B. Norton*, swamp near mouth of Kilgore Branch, east of Hartsville, South Carolina, November 5, 1921 (U.S.); *H. Ravenel*, damp pine land, Santee Canal, South Carolina, September (Gray); *F. Rugel* 570 pro parte, Florida, 1845 (Field); *John Donnell Smith*, swampy woods, Columbia, South Carolina, September, 1883 (Field, 2 sheets); *idem* 2028, swampy woods 4 miles northeast of Columbia, September 25, 1883 (Field; Gray; U.S., 2 sheets); *Taylor*, Thomasville, Georgia, September 30, 1903 (Gray); *Otto Vesterland*, Marion County, Florida, November, 1889 (U.S.).

108. *Coreopsis integrifolia* Poir. *Encycl. Suppl.* 2: 353. 1811.

Herba perennis, erecta, gracilis, 6–9 dm. alta, caule glabro, tereti vel subangulato, subsimplici, fere omnino folioso. Folia opposita, petiolata petiolis hispido-ciliatis usque ad 3 cm. longis (vel summa sessilia); laminis diverse ovalia vel ovata vel suboblonga, crassiuscula, utrinque acuta vel subobtusa, marginibus venisque saltem primo hispida aliter glabra, 1–4 cm. longa, majora 1.5–2 cm. lata. Capitula pauca, tenuiter pedunculata pedunculis glabratiss ± 1 dm. longis, radiata, pansa ad anthesin 2.5–4 cm. lata et ± 9 mm. alta. Involucri bractee exteriores ± 6 , lineari-oblongae, ciliatae, obtusae, demum patentes vel reflexae, 2–4 (–6 ?) mm. longae; interiores ovatae 4–8 mm. longae. Flores ligulati plerumque 8, flavi, ligula cuneato-obovati, apice 3-lobati, 1–1.5 cm. longi. Paleae tenuiter lineari-oblongae. Florum tubulosorum stylorum rami

apice obtusissime brevi-conici. Achaenia non visa. Ovaria plana, subalata, biaristata aristis nudis.

Type specimen: Collected by *Bosc* in Carolina (Par.?).

Distribution: South Carolina and Georgia, also (fide F. E. Boynt. in Small Fl. S. E. United States 1279. 1903) in Florida.

Specimens examined: *Biltmore Herb.* 14759a, low, flat land along St. Mary's River, Folkston, Georgia, August 27, 1904 (N.Y.); *A. W. Chapman*, banks of Spring-brook, Decatur County, Georgia (N.Y.); *Ravenel*, damp, rich soils, Santee Canal, South Carolina, September (Gray). In addition, I have seen the fragment (Gray) obtained by Asa Gray at the DeCandolle Herbarium, doubtless from a cotype specimen.

A species very rare in herbaria and imperfectly known as to fruiting characters. Boynton (loc. cit.) classes it, in his key, with the species having achenial margins fimbriate or dissected-winged. His specific description (p. 1279) omits, however, all reference to achenes.

109. *Coreopsis nudata* Nutt. Gen. N. Amer. Pl. 2: 180. 1818; Hook. f. Bot. Mag. pl. 6419. 1929. *Calliopsis nudata* (Nutt.) Spreng. Syst. Veg. 3: 611. 1826. *Conopsis nudata* Nutt. ex Less. Syn. Gen. Compos. 228. 1832 (sphalm).

Herba perennis, glaberrima, 6–12 dm. alta, caulibus e radice fere tuberosa erectis, teretibus, flexuosis, summam versus corymbosae pauciramosis, internodiis elongatis. Folia alterna, simplicia, anguste linearia, plus minusve teretia et juncoidea, basalia elongatissima saepe 3–4 dm. longa, mediana superioraque ± 1 dm. longa, summa subulata ± 1 cm. longa. Capitula pauca, radiata, longe tenuiterque pedunculata, pansa ad anthesin 4–6 cm. lata et circ. 7–8 mm. alta. Involucri bractee exteriores 6–9, plus minusve irregulariter positaе, lanceolatae, medio longitudinaliter vittatae, marginibus diaphanae, basi subauriculatae, tergo saepe subscabridae, 2–4 mm. longae; interiores ovatae, saepe subscabridae, 7–10 mm. longae. Flores ligulati circ. 8, rosei, obovato-cuneati, apice 3-lobati lobis lateralibus rotundatis mediano plerumque multo majore truncato vel emarginato, 1.5–2.2 cm. longi. Paleae late lineari-oblongae, apice subacutae, circ. 5–6 mm. longae. Flores tubulosi corolla flavidi, stylorum ramis obtuse truncato-conicis. Achaenia subplana oblonga, faciebus nigra, marginibus irregulariter pectinato-dentata dentibus saepe 2–4-congregatis subbrunneis plus minusve planis apice obtusissimis quam corporis diametro saltem dimidio brevioribus, corpore circ.

2.5–3.1 mm. longa et (dentibus lateralibus inclusis) 1–1.4 mm. lata, apice biaristata (aristis linearibus stramineis antrorsum hispidis 0.6–1 mm. longis) atque inter aristas poculo minuto centrali coronata.

Type specimen: Collected by *William Baldwin*, near St. Mary's, "west Florida."

Distribution: Southern Georgia and northernmost Florida.

Specimens examined: *Biltmore Herb.* 2070b, bordering pond in pine barrens, near Apalachicola, Florida, April 14, 1894 (Gray); *A. W. Chapman*, Apalachicola, Florida (Gray; N.Y., 2 sheets); herb. *eiusdem* 2070b, bordering ponds in pine barrens, near Apalachicola, Florida, April 14, 1894 (Field; N.Y.; cf. *Biltmore Herb.* 2070b); *A. H. Curtiss* 1484, pine barren swamps, near Jacksonville, Florida, May (Berl.; Field, 3 sheets; Gray); *idem* 4488, near Jacksonville, April 29, 1893 (N.Y.); *idem* 4713, swampy places in pine barrens, near Jacksonville, April 21, 1894 (Field; Gray); *Asa Gray*, Apalachicola, Florida, April, 1875 (Gray); *Roland M. Harper* 1001, alt. 70 meters, wet pine barrens near Collins, Georgia, July 4, 1901 (Berl.; Gray; N.Y.); *idem* 2198, cypress pond near Douglas, Coffee County, Georgia, May 11, 1904 (Berl.; Gray; N.Y.); *Albert S. Hitchcock*, Jacksonville, Florida (Field); *B. F. Saurman*, wet pine barrens, Apalachicola, Florida (Field); *John K. Small*, *John B. DeWinkeler*, & *Charles A. Mosier* 11252, Apalachicola prairies, Florida, April 25, 1924 (N.Y.); *John Donnell Smith*, near Starke, Florida, April 9, 1880 (Field); *C. S. Williamson*, Waycross, Georgia, April 15 (N.Y.).

110. *Coreopsis Mildbraedii* Muschler, *Wiss. Ergebn. Deutsch. Zentr. Afr.-Exped.* 1907–1908, 2: 381. 1911.

Herba perennis vel suffruticosa, erecta, 1–1.5 m. alta; caulis ramisque subhirtis vel deinde mox glabratis glaberrimisve, striato-sulcatis, teretibus, plus minusve ochraceis. Folia opposita petiolata petiolis concavis basi subvaginatis et linea prominente ad medium adpresse retrorsumque hirsuta conjunctis usque ad 2 cm. longis, petiolo adjecto 8–17 cm. longa, semel bis vel terne pinnatisecta, segmentis principalibus circumambitu ovatis vel rhomboideolanceolatis, faciebus dense glanduloso-punctulatis sed glabratis, marginibus ciliatis ac perspicuissime dentatis (dentibus elongatis saepius lineari-lanceolatis apicaliter acerrimis saepe 1–1.5 cm. longis) apice acerrime elongato-acuminatis. Capitula subnumerosa, tenuiter pedicellata pedicellis (1–3-bracteatis vix ultra 0.75 mm. crassis, infra glabris supra hispidis) saepius 4–12 cm. longis, radiata,

pansa ad anthesin ± 4.5 cm. lata et 11 mm. alta. Involucri bractee exteriores (1–3 proximae vere pedicella genitae exclusae) circ. 6–9, virides, elongato-lineares, dorso glabratae, marginibus infra plerumque glabratae supra spinuloso-ciliatae, apice induratae, saepius 1.3–1.8 cm. longae et circ. 1.5 mm. latae; interiores ovatae, marginaliter diaphano-flavae alibi intense purpurascenti-atrae, tergo pubescentes, apice pulverulentae, tantum 5–8 mm. longae. Flores ligulati verisimiliter 8–10, flavi, ligula elliptico-oblongeolati, apice minute denticulati, circ. 2 cm. longi et 4–6 mm. lati. Paleae oblongo-lineares, pluristriatae, apice saepe subabrupte acutae, 6–8 mm. longae. Disci florum stigmata terminaliter elongato-caudata. Achaenia obovato-oblonga vel lineari-oblonga, obcompressa, apicem versus rarius contracta, atra, unaquaque facierum circ. 8-sulcata et sparsim erecto-setosa, marginibus anguste alata alis brunneis antrorsum setosis, corpore ipso 4.5–6 mm. longa et 1.5–2 mm. lata, apice dense breviterque erecto-setoso biaristata aristis erectis tenuibus sursum hispidis 1–2.5 mm. longis.

Type specimen: Collected by *Mildbraed* (Exped. d. *Herzogs Ad. Friedr. z. Mecklenburg Afr.* 1907–1908), No. 2539, growing 1–1.5 meters high at altitude of 3,000 meters, at edge of mountain forest and near the *Ericaceae*, Butagu Valley, Ruwenzori West, Belgian Congo, middle of February, 1908 (Berl.).

Distribution: Known only from type locality in Belgian Congo.

Specimens examined: *Jean Lebrun 4507*, alt. 2,475 meters, Valley of the Nyamuwamba, Ruwenzori, Belgian Congo, November, 1931 (Mus. Cong., 2 sheets); *Mildbraed 2539* (type, Berl.).

The achene wings are narrow and thickish, offering an approach to *Bidens*. The species is at once distinguished from all other species in both *Bidens* and *Coreopsis* by its (sharply cut) foliage. The exceptionally elongate exterior involucre bracts are an additional aid in identification. Lebrun's label describes the plant as having a strong odor of tansy (*Tanacetum vulgare* L.).

111. *Coreopsis bracteosa* Sherff, Bot. Gaz. 76: 88. 1923.

Herba glabra, verisimiliter perennis et 7–10 dm. alta, caulibus internodiis folia superantibus, mediis inferioribusque saltem 18–22 cm. longis. Folia sessilia, indivisa, linearia, 6–20 cm. longa et 4–10 mm. lata, in apicem acutum sensim angustata, sparsim dentata dentibus saepe ad spinas vel etiam ad pilos spinulosos flexiles reductis, margine revoluta et interdum minutissime spinuloso-ciliata. Capitula pedunculata pedunculis maximam partem glabris usque ad

5 cm. longis, radiata, pansa ad anthesin 3.5–4.5 cm. lata et 6–9 mm. alta. Involucri bracteae exteriores numerosae 19–21, anguste lineares, margine spinuloso-ciliatae, aliter glabrae, apice acerrime apiculatae, 1–1.7 cm. longae, interioribus lanceolatis dorso hispidis (pilis inferne squamellato-dilatatis) plerumque dimidio longiores. Flores ligulati circ. 12, ligula elliptici, lutei, apice denticulati, circ. 1.7–2 cm. longi et 5–7 mm. lati. Paleae oblongo-lanceolatae, apice subito angustatae, costa mediana brunnea perspicua. Disci florum stigmata caudato-apiculata. Achaenia atra, linearia vel oblonga, valde obcompressa, plerumque alata, margine et supra ad faciem sursum hispida, corpore circ. 4–5 mm. longa et (alis inclusis) 1–1.5 mm. lata, biaristata aristis antrorsum hispidis 0.6–3 mm. longis. Planta *Bidenti chaetodontae* Sherff affinis sed foliis indivisis non pinnatipartitis, involucri bracteis exterioribus 19–21 non tantum 12, achaeniis plerumque alatis non exalatis, etc. differt.

Type specimen: Collected by *Hans Meyer*, No. 532, at altitude of 1,200–1,400 meters, bush and tree-grass-steppe, Jhangiro and Karagwe, German East Africa, summer of 1911 (Berl.).

Distribution: British and German East Africa.

Specimens examined: *Meyer 532* (type, Berl.); *A. Whyte*, on 5th march from Nandi to Kagamagas, Tropical East Africa, 1898 (Kew).

112. *Coreopsis Prestinaria* Schz. Bip. in Walpers, Repert. 6: 163. 1846. *Prestinaria Bidentoides* Schz. Bip. loc. cit. *Verbesina veris* A. Richard, Tent. Fl. Abyssin. 1: 407. 1847. *C. Prestinaria* f. *typica* Vatke and f. *latisecta* Vatke, Linnaea 39: 498. 1875.

Herba annua, subglabra, erecta, 2–6 dm. alta, ramis tenuibus saepe subnumerosis. Folia opposita, inferiora (ac interdum mediana) tenuiter petiolata petiolis saepius glabratibus usque ad 2 cm. longis, superiora (ac plerumque mediana) breviter alato-petiolata vel subsessilia, omnia 3–6 cm. longa, circumambitu triangulata vel ovato-triangulata, bipinnatisecta, lobis membranaceis linearibus vel oblongo-lanceolatis glabris vel aegre ciliatis apice calloso-mucronatis. Capitula tenuiter pedicellata pedicellis usque ad 6 cm. longis, subnumerosa, radiata, pansa ad anthesin 2–3 cm. lata et circ. 8 mm. alta. Involucri glabri bracteae exteriores 8–10, uniseriales, lineares vel lineari-spathulatae, trinerviae, calloso-apiculatae, circ. 6 mm. longae; interiores oblongo-lanceolatae, badiae, margine diaphanae, saepe paulo longiores. Flores ligulati circ. 8, flavi, ligula lineari-elliptici, apice integri, circ. 1–1.4 cm. longi et 3–4 mm. lati. Paleae

anguste oblongae, nitidae, paucistriatae, usque ad circ. 12 mm. longae et circ. 1.5 mm. latae. Disci florum stigmata tenuia terminaliter angustata. Achaenia obcompressa, corpore lineari-fusiformia vel lineari-clavata nigra faciebus adpresse erecteque papillato-setosa 6–9 mm. longa et 0.9–1.1 mm. lata, lateraliter alata alis angustis stramineis vel subbadiis superne 0.3–0.5 mm. latis marginibus exterioribus erecto-ciliatis, apice erecto-setosa et biaristata aristis subulatis stramineis antrorsum hispidulis 4–6 mm. longis.

Type specimen: Collected by *Wilhelm Schimper*, No. 62, near Djeladjeranne (Dscheladscheranne), Abyssinia, 1840 (Par.; nomen vulg., Gellgelle Maskal).

Distribution: Abyssinia.

Specimens examined: *J. M. Hildebrandt* 417, during rainy season, September, 1872 (Berl.); *A. Petit*, Abyssinia (Berl., 3 sheets; Par., 3 sheets); *Quartin Dillon* 612, Abyssinia, November, 1840 (Par., 2 sheets); *Schimper* 62 (type, Par.; cotypes, Berl., 4 sheets; Gray; N.Y.; Par., 2 sheets); *idem* 429, mountains and valleys at 1,860 meters alt., Gowwo Soria, Tigre, Abyssinia, September 26, 1862 (Berl., 2 sheets; type collection of *f. latisecta* Vatke); *H. Steudner* 349, Keren, etc., Tigre, Abyssinia (Berl.; nom. *tigrense*, Adé).

Often confused with *C. macrantha* but easily distinguished by its annual habit, lower stature, smaller flowering heads, smooth inner involucre bracts, more narrowly winged achenes, etc. The *f. latisecta* Vatke has leaf divisions slightly wider than in the type specimens but apparently is only a robust state of the species.

Vatke (loc. cit.) confused *C. macrantha* with this species, as is shown by his inclusion of *Schimper* 71 and 1423 under *C. Prestinaria*. Oliver and Hiern (in *Oliv. Fl. Trop. Afr.* 3: 387. 1877) stated incorrectly that the aristae exceeded the achene in length. Seldom do they even equal it, although the coincidence of certain aristae with others underneath in a mature fruiting head often gives an exaggerated effect to the aristal length.

The native names recorded by Schimper and others for this and closely similar species are: Gellgelle Maskal (Schimp.; spelled Gueulguel-Makhul, A. Rich. loc. cit.); Adé (Steudner; spelled Addé, A. Rich. loc. cit.); Embobahgadé (A. Rich. loc. cit.).

113. *Coreopsis macrantha* Schz. Bip. in Walpers, Repert. 6: 163. 1846. *Verbesina macrantha* (Schz. Bip.) A. Rich. Tent. Fl. Abyssin. 1: 408. 1847. *C. macroptera* Schz. Bip. ex Schweinf. & Aschers. in Schweinf. Beitr. Fl. Aethiop. 284. 1867 (nomen subnudum);

cf. Pirotta, Fl. Della Colonia Eritrea 1: 184. 1904. *C. Prestinaria* f. *elatio*r Vatke, Linnaea 39: 498. 1875 (excl. Schimper plantam n. 22). *Prestinaria macrantha* Schz. Bip. ex O. & H. in Oliver, Fl. Trop. Afr. 3: 391. 1877.

Herba perennis, adscendenti-erecta e radice lignescenti fibrosa multicauli, 3–15 dm. alta, caulibus subtetragonis vel subteretibus, glabris, internodiis quam foliis saepius multo longioribus. Folia opposita, plerumque breviter petiolata petiolis glabris late alato-marginatis tantum 2–8 mm. longis, petiolo adjecto 3–8 cm. longa, bipinnatisecta, lobis linearibus glabris membranaceis, corpusculo subcorneo terminatis, saepius 1.5–4 mm. latis. Capitula tenuiter pedicellata pedicellis glaberrimis usque ad 18 cm. longis, radiata, pansa ad anthesin 3–4 (–5) cm. lata et 8–13 mm. alta. Involucri bracteae subaequilongae, exteriores 9–13 saepe subbiseriales, lanceolato-lineares vel rarius anguste lineares, 3-(vel sub 5-) nerviae, omnino virides vel marginibus angustis albescentes, glabrae, apice subabrupte acutae, circ. 8–13 (rarius –18) mm. longae; interiores oblongo-lanceolatae, coloratae, marginibus diaphanae, ad tergi costam medianam hispidio-fimbriatae. Flores ligulati circ. 8–10 (12 fide Schultzii), flavi, ligula ovato-oblongi, apice minute denticulati, 1.7–2.5 cm. longi et 5–10 mm. lati. Paleae lineari-oblongae, glabrae, 1–1.4 cm. longae. Disci florum stigmata caudato-appendiculati. Achaenia plana, corpore nigra anguste lineari-oblonga adpresse erecto-setosa 6–8 (–13) mm. longa et 0.9–1.2 mm. lata; margine moderate vel latissime alata alis hispidis et densissime erecto-ciliatis supra interdum 2–4 mm. latis; apice setis numerosis albescentibus erectis nitidis elongatis ac 2 aristis erectis subulatis stramineis antrorsum hispidis 3–7 mm. longis coronata.

Type specimen: Collected by *Wilhelm Schimper* (sect. 2, No. 1236, Enschedcap, Abyssinia (Par.).

Distribution: Eritrea and Abyssinia.

Specimens examined: *Anon.*, cult. in Hort. Berol., 1860 (Berl.; Par.); *Antinori*, Province of Scioa (Shoa), Abyssinia, 1878 (Flor.); *Emilio Chiovenda*, District of Semien, Province of Amhara, Abyssinia, December 3, 1909 (Flor.); *idem* 1820, District of Dembià (Dembea), Province of Amhara, September 3, 1909 (Flor.); *idem* 2205, Gondar, Province of Amhara, September 25, 1909 (Flor.); *Quartin Dillon*, Abyssinia (Par.); *Ellenbeck* (Exped. *Baron von Erlanger*) 1660, alt. 3,500 meters, Schoa, Province of Schoa (Shoa), Abyssinia, November 16, 1900 (Berl.); *Adriano Fiori* 1826, alt. 2,000 meters, Hamasen region, Eritrea, April 1, 1909 (Flor.); *G. Negri* 56, Province

of Scioa, Abyssinia, 1909 (Flor.); *idem* 235 bis, eodem loco et tempore (Flor.); *idem* 618, alt. 2,650 meters, eodem loco (Flor.); *O. Neumann* 75, alt. 1,800–2,300 meters, between Kontschu and Tomata (Gudji), Abyssinia, December 24, 1900 (Berl.; forma involucro exteriore *C. Prestinariae* adpropinquans); *A. Pappi* 1194, alt. 2,800–3,000 meters, toward the Torrent of Arigot, Mount Mamahot, Soyrà Mountains, August 23, 1902 (Flor.); *idem* 1303, alt. 2,600–2,800 meters, Torrent of Arigot, Soyrà Mountains, Oculé Cusae, Eritrea, August 23, 1902 (Flor.); *idem* 2642, Eritrea, July 14–15, 1902 (Flor.); *A. Petit*, Abyssinia (Berl., 2 sheets); *V. Ragazzi*, Antoto, Province of Scioa, October 2, 1887 (Flor.); *idem*, Let-Marefia, Province of Scioa, September 4, 1886 (Flor.); *idem*, eodem loco, September 6, 1886 (Flor.); *idem* 250, alt. 2,000 meters, Amasen Quazien west of Dorfu, Eritrea, September, 1892 (Flor.); *Rohlf & Stecker*, alt. 2,450 meters, Katz, Abyssinia, December 30, 1880 (Berl., 2 sheets); *Rüppell*, between Temben and Siemen, Abyssinia, June or July, 1832 (Par.); *W. Schimper* (itin. abyssin. sect. 5. n. 22, edit. Buchinger, 1854), Abyssinia (Berl.; Del.; Kew; Par., 3 sheets; type material of *Coreopsis macroptera* Schz. Bip.); *idem* 48, in fields, alt. 2,790 meters, Dibra Eski (Siemen), Abyssinia, November 6, 1850 (Par., 2 sheets; “blooming in August and September”); *idem* 71, alt. 1,890 meters, mountains and valleys, Mai Sigamo, Abyssinia, September 26, 1862 (Berl., 3 sheets); *idem* 85, Abyssinia (Par.); *idem* (itin. abyssin. sect. 5. n. 95, edit. Buchinger, 1854), Abyssinia (Par.); *idem* (itin. abyssin. sect. 5. n. 1005, edit. Buchinger, 1854), Province of Agow, Abyssinia, 1853 (Par., 3 sheets); *idem* 1236 (type, Par.; cotypes, Berl., 2 sheets; N.Y.; Par.); *idem* 1423, alt. 3,150 meters, Mount Gunna, Abyssinia, December 18, 1863 (Berl.; Kew); *Hugh Scott*, alt. 2,700–2,900 meters, Mount Zuguala, Abyssinia, October 21–27, 1926 (Kew); *H. Steudner* 253, Province of Amhara, May 20, 1862 (Berl.); *A. Terracciano & A. Pappi* 2474, alt. about 2,000 meters, Alibaret-Sella Mogasas, Bogos, Eritrea, February 5, 1893 (Flor.).

Vatke (loc. cit.) appears to have completely ignored the perennial habit and proportionately shorter achaenial aristae of this species. He merged it (as *f. elatior*) with *C. Prestinaria*, a course not followed by Oliver and Hiern, or by Otto Hoffmann, or by other subsequent students of the group.

C. macroptera was known to Oliver and Hiern (in Oliv. Fl. Trop. Afr. 3: 391. 1877) only through achenes, and they referred it interrogatively to *C. macrantha* Schz. Bip. Schultz Bipontinus' private

herbarium (Par.) contains several sheets of excellent material labeled *C. macroptera* in his own writing. These, also several found elsewhere under his determination *C. macroptera*, have thicker and taller stems, mostly different leaves, mostly larger capitula with the larger, exterior bracts mostly more numerous and with their margins more conspicuously whitish, etc. (Folia subsessilia, 4–8 cm. longa, nunc bipinnatisecta lobis linearibus acriter apiculatis 1.5–5 mm. latis, nunc anguste oblongo-lanceolata lamina ipsa 1–1.5 cm. lata marginibus dentibus vel lobis linearibus perspicuissime elongatis [etiam 4.5 cm. longis] munita.) But a study of numerous other specimens more recently collected, especially by various Italian collectors, shows all intergradations, unless as to foliage. (In *C. macroptera* some of the principal leaves appeared to have a petiole and midrib grossly expanded into an abnormal blade, this irregularly toothed with greatly elongate, linear lobes. The appearance was unnatural and apparently teratological. However, we may consider this character as of no important value, since *C. Prestinaria* is known to produce at times a precisely comparable leaf-form.—Moreover, it may be noted that some authors who have retained *C. macroptera* have overlooked even this one seeming distinction. Thus R. Pirotta [Fl. Della Colonia Eritrea 1: 184. 1904] lists *C. macroptera* and cites for it *Terracciano & Pappi 2474*, a plant which is typical *C. macrantha*.)

114. *Coreopsis pachyloma* O. & H. in Oliver, Fl. Trop. Afr. 3: 391. 1877. *C. involucrata* Schz. Bip. in Walpers, Repert. 6: 163. 1846 (non Nutt. Journ. Acad. Phila. 7: 74. 1834). *Verbesina involucrata* (Schz. Bip.) A. Rich. Tent. Fl. Abyssin. 1: 409. 1847. *C. callosa* Schz. Bip. in Schweinf. & Aschers. Enum. 284. 1867.

Achaenia biaristata.....*C. pachyloma* sensu stricto.

Achaenia exaristata.....var. β *inanis*.

Herba annua, erecta vel adscendens, ramosa, 3–7 dm. alta; caule ramisque (siccis) viridi-stramineis, perspicue striatis, nunc glabratiss nunc hispidis, nitidis. Folia opposita tenuiter petiolata petiolis basaliter connatis interdum hispidis usque ad 2 cm. longis, petiolo adjecto usque ad 6 cm. longa, circumambitu late oblonga vel deltoideo-ovata, bipinnatipartita, lobis valde membranaceis, nervis marginibusque subsparsim setosis, saepe 1 vel 2 dentibus acriter serratis, abrupte mucronulatis, saepius 2–4 mm. latis. Capitula subcorymbosa, pedunculata pedunculis tenuibus hispidis 5–14 cm. longis, radiata, pansa ad anthesin circ. 2 cm. lata et 6–8 mm. alta. Involucris bracteae exteriores circ. 8, lineari-spathulatae, valde foliaceae, facie-

bus glabrae vel raro subhispidae, marginibus hispidociliatae, apice acuto vel subobtusos flavido-albidae ac cartilagineo-induratae, 7–12 mm. longae et superne 1–2.5 mm. latae: interiores ovato-oblongae dorso hispidae saepe paulo vel etiam fere dimidio breviores. Flores ligulati 6–8, flavi, ligula elliptico-oblongae, 6–12-striati, apice integri vel denticulati, 8–10 mm. longi et 3–5 mm. lati. Paleae subalbidae convexae conduplicatae, acutae, 7–9 mm. longae. Disci florum stigmata terminaliter caudata. Achaenia corpore ipso dorsaliter lineari-oblongae, moderate obcompressa, nigra (nitida), glabra vel supra erecto-setosa, 4.5–5.5 mm. longa et dorsaliter fere 1 mm. lata, lateraliter alis stramineis crassis erecte hispidis marginaliter rotundatis ventraliter fere 0.5 mm. latis bialata, apice biaristata aristis lanceolato-subulatis, hyalinis, infra valde membranaceis supra rigidis acerrimis, marginibus minute erecto-ciliolatis, 4–5.5 mm. longis.

Type specimen: Collected by *Wilhelm Schimper* in Abyssinia (Kew).

Distribution: Abyssinia.

Specimens examined: *Anon.*, under bushes at Gaffat near Debra Tabor, May 10, 1862 (Berl.); *Eduard Rüppell*, between Temben and Siemen, June or July, 1832 (type of *C. involucrata* Schz. Bip., Par.); *Schimper* (itin. abyssin.) sect. 5. nos. 15 (Del.; Par.) and 933 (Par.).

An annual with the foliar habit of *Bidens pilosa* var. *bimucronata* f. *odorata* (Cav.) Sherff. The achenial characters separate it at once from other species of *Coreopsis*.

Coreopsis pachyloma var. β *inanis* Sherff, Bot. Gaz. 90: 386. 1930.

A specie acheniis etiam primo exaristatis differt.

Type specimen: Collected by *Wilhelm Schimper*, No. 933 pro parte, Abyssinia, commun. 1853 (Par.).

Distribution: Abyssinia.

Specimen examined: *Schimper* 933 pro parte (type, Par.).

PLANTAE EXCLUSAE

Coreopsis abyssinica Schz. Bip. ex Walp. Repert. 6: 163. 1846=*Bidens chaetodonta* Sherff, Bot. Gaz. 90: 387. 1930.

Coreopsis abyssinica var. *bipinnato-partita* Chiov. in Pirotta, Fl. Colon. Eritrea 185. 1904=*Bidens setigera* (Schz. Bip.) Sherff, op. cit. 90: 390. 1930.

Coreopsis abyssinica var. *glabrior* O. & H. in Oliv. Fl. Trop. Afr. 3: 389. 1877=*Bidens chaetodonta* var. *glabrior* (O. & H. in Oliv.) Sherff, op. cit. 90: 388. 1930.

Coreopsis abyssinica f. *latisecta* Vatke, Linnaea 39: 499. 1875 (nom. subnudum)=*Bidens articulata* Sherff, op. cit. 94: 591. 1932.

Coreopsis Acmella (L.) E. H. L. Krause, Beih. Bot. Centralbl. 32, pt. 2: 340. 1914=*Spilanthus Acmella* (L.) Murr. Syst. Veg. ed. 13. 610. 1774.

Coreopsis Acmella var. *uliginosa* E. H. L. Krause, loc. cit.=*Spilanthus uliginosa* Swartz, Prodr. Veg. Ind. Occ. 110. 1788.

Coreopsis alata Cav. Icon. et Descr. 3: 30, pl. 260. 1795=*Verbesina occidentalis* (L.) Walt. Fl. Carol. 213. 1788.

Coreopsis alba L. Sp. Pl. 908. 1753.=*Bidens pilosa* var. *radiata* f. *Dondiaefolia* (Less.) Sherff, Bot. Gaz. 97: 607. 1936.

Coreopsis alternifolia L. op. cit. 909. 1753=*Actinomeris alternifolia* (L.) DC. Prodr. 5: 575. 1836.

Coreopsis ambacensis Hiern, Cat. Welw. Afr. Pl. 1, pt. 3: 586. 1898=*Bidens ambacensis* (Hiern) Sherff, Bot. Gaz. 59: 309. 1915.

Coreopsis ambigua Nutt. Journ. Acad. Phila. 7: 75. 1834=*Bidens mitis* (Michx.) Sherff, op. cit. 81: 43. 1926.

Coreopsis amplexicaulis Cav. Descr. 226. 1802=*Simsia foetida* (Cav.) Blake, Proc. Amer. Acad. n. ser. 41: 385. 1913.

Coreopsis Anagallis E. H. L. Krause, Beih. Bot. Centralbl. 32, pt. 2: 344. 1914=*Enhydra Anagallis* Gardn. Lond. Journ. Bot. 7: 409. 1848.

Coreopsis Anthemoides DC. Prodr. 5: 573. 1836=*Bidens Anthemoides* (DC.) Sherff, Bot. Gaz. 56: 493. 1913.

Coreopsis arenicola S. L. Moore, Journ. Linn. Soc. 37: 170. 1905=*Bidens musoziana* Sherff, op. cit. 59: 309. 1915.

Coreopsis arguta Pursh, Fl. Amer. Sept. 2: 567. 1814=*Bidens mitis* (Michx.) Sherff, op. cit. 81: 43. 1926.

Coreopsis aristata Willd. Sp. Pl. 3: 2253. 1804=*Bidens aristosa* (Michx.) Britt. Bull. Torr. Bot. Club 20: 281. 1893.

Coreopsis aristosa Michx. Fl. Bor. Amer. 2: 140. 1803=*Bidens aristosa* (Michx.) Britt. loc. cit.

Coreopsis aristosa var. *mutica* A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 295. 1884=*Bidens aristosa* var. *mutica* A. Gray ex Gattinger, Fl. Tenn. 172. 1901.

Coreopsis arizonica (A. Gray) O. Hoffm. in Engl. & Prantl, Nat. Pflanzenf. 4, pt. 5: 243. 1890=*Coreocarpus arizonica* (A. Gray) Blake, Proc. Amer. Acad. n. ser. 49: 344. 1913.

Coreopsis Artemisiaefolia Jacq. Icon. Pl. Rar. 3: pl. 595. 1786–1793; Coll. Suppl. 155. 1796=*Cosmos sulphureus* Cav. Icon. et Descr. 1: 56. pl. 79. 1791.

Coreopsis Artemisifolia Sessé & Moc. Fl. Nov. Hispan. ed. 2. 137. 1893=*Cosmos sulphureus* Cav. loc. cit.

Coreopsis asperata Hutch. & Dalz. Fl. West Trop. Afr. 2: 141–143. 1931; cf. Sherff, Bot. Gaz. 93: 219. 1932=*Bidens asperata* (Hutch. & Dalz.) Sherff, loc. cit. 93: 220. 1932.

Coreopsis Aspilioides Bak. Kew Bull. 153. 1898=*Bidens Aspilioides* (Bak.) Sherff, op. cit. 94: 590. 1932.

Coreopsis aurea Dryand. in Ait. Hort. Kew. ed. 1, 3: 252. 1789=*Bidens aurea* (Dryand. in Ait.) Sherff, op. cit. 59: 313. 1915.

Coreopsis Bacana Heyne ex DC. Prodr. 5: 632. 1836=*Glossogyne pinnatifida* (Buch.-Ham. in Wall.) DC. in Wight, Contr. 19. 1834.

Coreopsis baccata L. Pl. Surin. 14. 1775; Amoen. Acad. 8: 262. 1785=*Wulffia stenoglossa* DC. 5: 563. 1836.

Coreopsis Baumii O. Hoffm. in H. Baum, Warb. Kunene-Zambesi Exped. 419. 1903=*Bidens Baumii* (O. Hoffm.) Sherff, Bot. Gaz. 59: 309. 1915.

Coreopsis Bidens L. Sp. Pl. 908. 1753=*Bidens cernua* L. op. cit. 832.

Coreopsis Bidentoides Nutt. ex Torr. & Gray, Fl. N. Amer. 2: 339. 1843=*Bidens Bidentoides* (Nutt.) Britt. Bull. Torr. Bot. Club 20: 281. 1893.

Coreopsis biternata Lour. Fl. Cochinch. ed. 1. 508. 1790=*Bidens biternata* (Lour.) Merr. & Sherff ex Sherff, Bot. Gaz. 88: 293. 1929.

Coreopsis Buchingeri Schz. Bip. in Schweinf. & Aschers. Enum. 284, nomen=*Bidens rotata* Sherff, op. cit. 90: 391. 1930.

Coreopsis Buchneri Klatt, Leopoldina 25: 107. 1889=*Bidens Buchneri* (Klatt) Sherff, op. cit. 76: 158. 1923.

Coreopsis Buchneri Klatt, Ann. Naturh. Hofmus. Wien 7: 103. 1892=*Bidens grandis* Sherff, op. cit. 59: 309. 1915.

Coreopsis chrysantha Vatke, Linnaea 39: 499. 1875=*Bidens Vatkei* Sherff, op. cit. 90: 388. 1930.

Coreopsis chrysantha var. *simplicifolia* Vatke, op. cit. 500=*Bidens Dielsii* Sherff, op. cit. 90: 388. 1930.

Coreopsis cordifolia (Schz. Bip.) Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 208. 1890; Fl. Polyn. Franc. 109. 1892=*Bidens cordifolia* Schz. Bip. Flora 39: 361. 1856.

Coreopsis cordifolia Sessé & Moc. Pl. Nov. Hispan. ed. 2. 137. 1893=*Dahlia cardiophylla* Blake and Sherff, nom. nov.

The type is still extant (Herb. Bot. Gard. Madrid). Dr. Sidney F. Blake, Senior Botanist of the United States Bureau of Plant Industry, has independently examined it at my suggestion and writes: "I agree that it is undoubtedly a hitherto unrecognized species of *Dahlia*."

Coreopsis coriacea O. Hoffm. in Engl. Pflanzenw. Ost-Afr. C: 414. 1899=*Bidens coriacea* (O. Hoffm.) Sherff, Bot. Gaz. 81: 52. 1926.

Coreopsis corymbifolia Buch.-Ham. ex DC. Prodr. 5: 602. 1836=*Bidens pilosa* L. Sp. Pl. 832. 1753.

Coreopsis Cosmoides A. Gray, Proc. Amer. Acad. 5: 126. 1861=*Bidens Cosmoides* (A. Gray) Sherff, Bot. Gaz. 70: 98. 1922.

Coreopsis crassifolia Sessé & Moc. Fl. Mex. ed. 2. 194. 1894=*Dahlia variabilis* Desf. Cat. Hort. Par. ed. 3. 182. 1829. The Sessé & Mocino type came from mountains in Temascaltepec, State of Mexico. Its leaves are simple (although the lower ones are described as ternate). The general appearance is thus quite different from that in *Dahlia variabilis* Desf. With that species, however, it is definitely seen to belong from a study of *Pringle 3165*. The plant of this number at St. Louis (Mo.) has closely matching foliage, but the plant at Chicago (Field) has the leaves mostly 5-partite, as very commonly found in *D. variabilis*.

Coreopsis Crataegifolia O. Hoffm. Bot. Jahrb. 30: 431. 1901=*Bidens Crataegifolia* (O. Hoffm.) Sherff, op. cit. 76: 158. 1923.

Coreopsis cuspidata Bertol. Misc. Bot. 7: 44. 1848 (ex descript. et patria)=*Bidens mitis* (Michx.) Sherff, op. cit. 81: 43. 1926.

Coreopsis dichotoma Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 209. 1890 (nec alior.)=*Bidens Degeneri* Sherff, op. cit. 85: 3. 1928.

Coreopsis diffusa Jones, Extracts Contr. West. Bot. 18: 73. 1933=*Chrysanthellum mexicanum* Greenm. Proc. Amer. Acad. 39: 114. 1903 (forma humilis sed non aliter atypica).

Coreopsis discoidea Torr. & Gray, Fl. N. Amer. 2: 339. 1848=*Bidens discoidea* (Torr. & Gr.) Britt. Bull. Torr. Bot. Club 20: 281. 1893.

Coreopsis dissecta (Benth.) Blake ex Ind. Kew. Suppl. 5: 66. 1921 = *Coreocarpus dissectus* (Benth.) Blake, Proc. Amer. Acad. n. ser. 49: 344. 1913.

Coreopsis Elliotii S. L. Moore, Journ. Linn. Soc. 35: 346. 1902 = *Bidens Elliotii* (S. L. Moore) Sherff, Bot. Gaz. 59: 309. 1915.

Coreopsis exaristata O. Hoffm. in Engler, Pflanzenw. Ost-Afr. C: 414. 1899 = *Bidens microcarpa* Sherff, op. cit. 76: 84. 1923.

Coreopsis exaristata var. *gracilior* O. Hoffm. loc. cit. = *Bidens gracilior* (O. Hoffm.) Sherff, loc. cit. 1923.

Coreopsis Ferulaefolia Jacq. Hort. Schoenbr. 3: 65. 1798 = *Bidens Ferulaefolia* (Jacq.) DC. Prodr. 5: 603. 1836.

Coreopsis filifolia Hook. Bot. Mag. pl. 3505. 1836 = *Thelesperma filifolium* (Hook.) A. Gray, Syn. Fl. N. Amer. 1, pt. 2: 301. 1884.

Coreopsis Fischeri O. Hoffm. in Engler, Pflanzenw. Ost-Afr. C: 414. 1899 = *Bidens Fischeri* (O. Hoffm.) Sherff, Bot. Gaz. 76: 158. 1923.

Coreopsis flammula Banks ex Steud. Nomencl. ed. 1. 108. 1821 = *Bidens laevis* (L.) Britton, Sterns & Poggenb. Prel. Cat. 29. 1888 (fide syn. *B. Chrysanthemoidis* in Steud. loc. cit.).

Coreopsis Foeniculacea Sessé & Moc. ex DC. Prodr. 5: 603. 1836 = *Bidens Ferulaefolia* var. *Foeniculacea* (DC.) Sherff, Bot. Gaz. 81: 39. 1926.

Coreopsis foetida Cav. Icon. et Descr. 1: 55, pl. 77. 1791 = *Simsia foetida* (Cav.) Blake, Proc. Amer. Acad. n. ser. 41: 385. 1913.

Coreopsis formosa Bonato Pisaura autom. *Coreopsis formosa* 22, pl. 2. 1793 = *Cosmos bipinnatus* Cav. Icon. et Descr. 1: 10, pl. 14. 1791.

Coreopsis frondosa O. Hoffm. in Engler, Pflanzenw. Ost-Afr. C: 414. 1899 = *Bidens magnifolia* Sherff, Bot. Gaz. 90: 390. 1930.

Coreopsis fruticosa Forst. Fl. Ins. Austr. Prodr. 91. 1786, nomen = *Bidens australis* Spreng. Syst. Veg. 3: 453. 1826.

Coreopsis Georgina Cass. Dict. Sci. Nat. 18: 441. 1820 = *Dahlia variabilis* (Willd.) Desf. Cat. Hort. Par. ed. 3. 182. 1829.

Coreopsis Georgina var. *nuda* Cass. op. cit. 442 = *Dahlia variabilis* (Willd.) Desf. loc. cit.

Coreopsis Georgina var. *pruinosa* Cass. op. cit. 443 = *Dahlia variabilis* (Willd.) Desf. loc. cit.

Coreopsis glaucescens O. & H. in Oliv. Fl. Trop. Afr. 3: 389. 1877 = *Bidens articulata* Sherff, Bot. Gaz. 94: 591. 1932.

Coreopsis Grantii Oliv. Trans. Linn. Soc. 29: 98. pl. 65. 1874 = *Bidens Grantii* (Oliv.) Sherff, op. cit. 59: 309. 1915.

Coreopsis hawaiiensis (A. Gray) Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 209. 1890=*Bidens hawaiiensis* A. Gray, Proc. Amer. Acad. 5: 128. 1861.

Coreopsis heterophylla Cav. Icon. et Descr. 3: 34, pl. 268. 1795; Descr. 226. 1802=*Iostephane heterophylla* (Cav.) Benth. in Benth. & Hook. Gen. Pl. 2: 368. 1873.

Coreopsis heterophylla Bertol. Misc. Bot. 7: 43. 1848 (ex descript. et patria)=*Bidens mitis* (Michx.) Sherff, Bot. Gaz. 81: 43. 1926.

Coreopsis Hillebrandiana Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 209. 1890=*Bidens Hillebrandiana* (Drake del Cast.) Deg. ex Sherff, op. cit. 85: 6. 1928.

Coreopsis hirta Raf. Ann. Nat. 15. 1820=*Rudbeckia triloba* L. Sp. Pl. 907. 1753 (fide Torr. & Gray, Fl. N. Amer. 2: 349. 1843).

Coreopsis Holstii O. Hoffm. in Engler, Pflanzenw. Ost-Afr. C: 415. 1899=*Bidens Holstii* (O. Hoffm.) Sherff, Bot. Gaz. 76: 79. 1923.

Coreopsis incisa Ker, Bot. Reg. 1: 7 (pl.). 1815=*Bidens incisa* (Ker) G. Don in Sweet, Hort. Brit. ed. 3. 360. 1839.

Coreopsis incurva Moench, Meth. Suppl. 245. 1802=*Bidens Ferulaefolia* (Jacq.) DC. Prodr. 5: 603. 1836 (fide auctorum).

Coreopsis insecta S. L. Moore, Journ. Bot. 46: 42. 1908=*Bidens insecta* (S. L. Moore) Sherff, Bot. Gaz. 59: 309. 1915.

Coreopsis involucrata Nutt. Journ. Acad. Phila. 7: 74. 1834=*Bidens polylepis* Blake, Proc. Biol. Soc. Wash. 35: 78. 1922.

Coreopsis Jardinii (Schz. Bip.) Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 209. 1890; Fl. Polyn. Franc. 109. 1892=*Bidens Jardinii* Schz. Bip. Flora 39: 360. 1856.

Coreopsis Jasminifolia Bertol. Misc. Bot. 7: 44. 1848=*Bidens mitis* (Michx.) Sherff, Bot. Gaz. 81: 43. 1926.

Coreopsis kilimandscharica O. Hoffm. Bot. Jahrb. 20: 234. 1894=*Bidens kilimandscharica* (O. Hoffm.) Sherff, op. cit. 59: 309. 1915.

Coreopsis Kirkii O. & H. in Oliv. Fl. Trop. Afr. 3: 390. 1877=*Bidens Kirkii* (O. & H. in Oliv.) Sherff, op. cit. 59: 309. 1915.

Coreopsis leucantha L. Sp. Pl. ed. 2. 1282. 1763=*Bidens pilosa* var. *radiata* Schz. Bip. in Bark.-Webb & Berth. Hist. Canar. 3, 2, part 2: 242. 1836-1850.

Coreopsis leucanthema L. Cent. Pl. 1: 29. 1755; Amoen. Acad. 4: 291. 1759=*Bidens pilosa* var. *radiata* Schz. Bip. loc. cit.

Coreopsis leucorhiza Lour. Fl. Cochinch. ed. 2. 622. 1793 (ex descript. et patria)=*Bidens pilosa* var. *minor* (Bl.) Sherff, Bot. Gaz. 80: 387. 1925.

Coreopsis leucorrhiza Lour. op. cit. ed. 1. 508. 1790 (ex descript. et patria)=*Bidens pilosa* var. *minor* (Bl.) Sherff, loc. cit.

Coreopsis Liebmannii Schz. Bip. ex Hemsl. Biol. Centr. Amer. Bot. 2: 196. 1881=*Verbesina intermissa* Blake, Contr. U. S. Nat. Herb. 23: 1578. 1926.

Coreopsis limensis Jacq. Coll. 2: 299. 1788=*Encelia canescens* Lam. Encycl. Meth. 2: 356. 1786 (fide Blake, Proc. Amer. Acad. n. ser. 41: 369. 1913).

Coreopsis linearifolia DC. Prodr. 5: 570. 1836=*Bidens angustissima* HBK. Nov. Gen. et Sp. 4: 183 (233). 1820.

Coreopsis linearifolia O. & H. in Oliv. Fl. Trop. Afr. 3: 390. 1877=*Bidens Schweinfurthii* Sherff, Bot. Gaz. 59: 309. 1915.

Coreopsis lineata Klatt, Ann. Naturh. Hofmus. Wien 7: 103. 1892=*Bidens grandis* Sherff, loc. cit.

Coreopsis lucida Cav. Descr. 224. 1802=*Bidens aurea* (Dryand. in Ait.) Sherff, op. cit. 59: 313. 1915.

Coreopsis Macraei A. Gray, Proc. Amer. Acad. 5: 126. 1861=*Bidens Campylothea* Schz. Bip. Flora 39: 359. 1856.

Coreopsis macrocarpa A. Gray, loc. cit.=*Bidens macrocarpa* (A. Gray) Sherff, Bot. Gaz. 70: 97. 1920.

Coreopsis Menziesii A. Gray, op. cit. 127=*Bidens Menziesii* (A. Gray) Sherff, op. cit. 70: 98. 1920.

Coreopsis micrantha (Gaud.) A. Gray, loc. cit.=*Bidens micrantha* Gaud. Voy. Freycinet Bot. Pl. 85 (sine descript.). 1830; *ibid.* 464.

Coreopsis mitis Michx. Fl. Bor. Amer. 2: 140. 1803=*Bidens mitis* (Michx.) Sherff, Bot. Gaz. 81: 43. 1926.

Coreopsis molokaiensis (Hillebr.) Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 210. 1890=*Bidens molokaiensis* (Hillebr.) Sherff, op. cit. 70: 97. 1920.

Coreopsis multifida DC. et var. *mutica* DC. Prodr. 5: 573. 1836=*Bidens pilosa* var. *bimucronata* f. *odorata* (Cav.) Sherff, op. cit. 81: 41. 1926.

Coreopsis nitida H. R. M. ex Elench. Pl. Hort. Bot. J.-J. Destremx 1805: 10. 1806, nomen (ex synon.)=*Bidens aurea* (Dryand. in Ait.) Sherff, op. cit. 59: 313. 1915.

Coreopsis odorata Poir. in Lam. & Poir. Encycl. Suppl. 2: 350. 1811; etiam Lam. & Poir. Atlas pl. 704, f. 1 (sine anno)=*Bidens pilosa* var. *bimucronata* f. *odorata* (Cav.) Sherff, op. cit. 81: 41. 1926.

Coreopsis odoratissima Cav. ex Pers. Syn. Pl. 2: 477. 1807=*Bidens pilosa* var. *bimucronata* f. *odorata* (Cav.) Sherff, loc. cit.

Coreopsis Oerstediana Benth. ex Oerst. Kjoeb. Vid. Medd. 93. 1852=*Bidens Oerstediana* (Benth. ex Oerst.) Sherff, op. cit. 80: 385. 1925.

Coreopsis ovata Cav. Icon. et Descr. 3: 41, pl. 280. 1795=*Actinomeris ovata* (Cav.) Nutt. ex DC. Prodr. 5: 576. 1836 (cf. Nutt. Gen. 2: 181. 1818).

Coreopsis parviflora Jacq. Hort. Schoenbr. 3: 65, pl. 374. 1798=*Cosmos parviflorus* (Jacq.) HBK. Nov. Gen. et Sp. 4: 189 (241). 1820.

Coreopsis polycephala (Schz. Bip.) Benth. & Hook. ex Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 217. 1890; etiam Fl. Polyn. Fr. 108. 1892=*Bidens polycephala* Schz. Bip. Flora 39: 360. 1856.

Coreopsis procera Dryand. in Ait. Hort. Kew. ed. 1. 3: 253. 1789=*Actinomeris alternifolia* (L.) DC. Prodr. 5: 575. 1836.

Coreopsis pulchella O. Hoffm. Bot. Jahrb. 38: 204. 1906=*Bidens microphylla* Sherff, Bot. Gaz. 90: 390. 1930.

Coreopsis quadricornis Krock. Fl. Siles. 2, pt. 2: 481. 1793=*Bidens cernua* L. Sp. Pl. 832. 1753.

Coreopsis Remyi Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 210. 1890=*Bidens micrantha* Gaud. Voy. Freycinet Bot. Pl. 85 (sine descript.). 1830; ibid. 464.

Coreopsis reptans L. Syst. Nat. ed. 10. 2: 1228. 1759; Amoen. Acad. 5: 381 (nomen) et 407. 1760=*Bidens reptans* (L.) G. Don in Sweet, Hort. Brit. edit. 3. 360. 1839.

Coreopsis Ridens Gunn. Fl. Norveg. 2: 87. 1772 (sphalm)=*Coreopsis Bidens* L.=*Bidens cernua* L. Sp. Pl. 832. 1753.

Coreopsis Rueppellii Schz. Bip. ex Walp. Repert. 6: 163. 1846=*Bidens Rueppellii* (Schz. Bip. ex Walp.) Sherff, Bot. Gaz. 90: 389. 1930.

Coreopsis ruwenzoriensis S. L. Moore, Journ. Linn. Soc. 35: 345. 1902=*Bidens coriacea* (O. Hoffm.) Sherff, op. cit. 81: 52. 1926.

Coreopsis Sambucifolia Cav. Descr. 225. 1802=*Bidens Sambucifolia* Cav. Icon. et Descript. 3: 15, pl. 229. 1795.

Coreopsis sandvicensis (Less.) Benth. & Hook. ex Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 210. 1890=*Bidens sandvicensis* Less. Linnaea 6: 508. 1831.

Coreopsis scandens Sessé & Moc. Pl. Nov. Hispan. ed. 2. 137. 1893; etiam Fl. Mex. ed. 2. 194. 1894=*Bidens squarrosa* HBK. Nov. Gen. et Sp. 4: 187 (238). 1820.

Coreopsis Schaffneri A. Gray, Proc. Amer. Acad. 19: 15. 1883=
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